PRINTING THEORY AND PRACTICE

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Compositors' Work

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Compositors' Work

By CHARLES L. PICKERING

GENERAL EDITOR
JOHN C. TARR

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3 Bookwork *Charles L. Pickering*
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AUTHOR'S NOTE

THE intention in this booklet (as in the previous one dealing with *Compositors' Equipment*) has been, not only to stimulate the interest of the apprentice-student in his everyday tasks, but also to encourage him to seek a wider knowledge of ancillary matters likely to be of value to him. With this aim in view, the student is reminded of those national examinations which offer opportunities for the individual student to test his knowledge and skill against his fellows and to obtain a recognized qualification in design and craft. Work systematically and progressively undertaken in accordance with these examination syllabuses should prove beneficial to him even if he does not sit for the ultimate examination.

In themselves, examinations are valueless, but, in the absence of any other criteria, they provide an index of the knowledge the student has acquired and of his aptitude for any special kind of work. With the tendency to-day towards specialization, too narrow a specialization is a grave danger to the individual and to the industry, but, provided the student has a broad knowledge of his trade, there is no reason why he should not seek to specialize in the particular field that attracts him.

In conclusion, the author wishes to thank, once again, the Editor for his tolerance and careful revisions, Mr. P. Lewis for line drawings and those friends and colleagues who have again offered valuable criticisms and suggestions.

C. L. P.

BROMLEY.

Compositors' Work

CHAPTER 1

THE QUALIFICATIONS OF THE COMPOSITOR

CRAFTSMANSHIP implies the appropriate use of materials and tools, and the requisite skill to use them; this is attainable only by diligent study of traditional standards of achievement and their relationship to present-day production and practice. In printing, particularly in the work of the compositor, excellence of technique will not of itself make a real craftsman. He needs a sound knowledge of punctuation, grammar and "style" generally, and an understanding of the typographic values of suitable fount equipments, spacing, type design and its appropriate use, of the typographic practice of all periods, and of contemporary work (as exemplified in the productions of the best printers, publishers and advertising agencies).

The compositor should also possess manual dexterity—a nimbleness of fingers to a degree not always sufficiently appreciated by intending recruits to the trade. He is required to handle intricately set tabular and table matter, often in small sizes of type, and to be able to make-up accurately and prepare for machine any kind of job which may be composed by hand or by the various composing and casting machines. Perhaps the essential quality desirable in a compositor is an infinite capacity for taking pains, whatever kind of work is to be done.

The compositor-apprentice, during his period of training in the workshop, usually works under the vigilant eye of a good journeyman to whom he is responsible. If the training is comprehensive the apprentice will be given work of

progressive difficulty, so that towards the end of his apprenticeship he should be as expedite and as competent as a journeyman and possess an equal degree of craftsmanship. If mechanical composing machines are installed in the office where he is apprenticed, the general practice is to allow him opportunity of learning machine composition, generally towards the end of his apprenticeship. He will, too, in most firms, be encouraged to study his craft at a Printing School which he will normally attend in the daytime,[1] though he may additionally, and advisedly, attend suitable evening classes. The experience in the school is of course supplementary to that gained in the works, but whereas he may have every opportunity of working and producing in the workshop, this will not alone make him a fully qualified compositor. The keen apprentice will supplement his trade experience by *educating* himself in the school, where he may pursue a study of typographic design, gain additional technical knowledge in his craft, and obtain a broader outlook of his trade by acquiring a knowledge of ancillary crafts, processes and materials.

The compositor's work may, to-day, be regarded as of three distinct kinds. It has become the practice to subdivide the work of the Composing Room into "jobbing" (or display work), book and magazine work, and newspaper production. Each of these categories calls for differences in equipment and in the skills involved in their production. While a compositor, if he desires, may transfer from one kind of work to another, he is usually expected to be capable or fully proficient in every section.

In practice, in all other than small composing departments, it is customary for the work to be divided into "ships" (companionships) where a journeyman has the delegated responsibility for certain sections of "jobbing" work or for the work on a given periodical. This journeyman is

[1] Under the provisions of the Joint Industrial Council Scheme for the Training of Apprentices, and the Education Act, 1944, release for part-time day training at a school becomes obligatory to the employer.

usually termed a "clicker" and the foreman or overseer of the department will arrange for him to have the assistance of the requisite number of compositors according to the amount of work in hand. In this way the "style" or arrangement of a journal is kept uniform in successive issues; the "clicker" being responsible for satisfying the editor's requirements in this respect by issuing the necessary instructions to the compositors assisting him.

In most composing rooms where mechanical composition is installed, the foreman or overseer will be responsible for this ancillary department, usually by delegating it to a foreman (or charge hand) in the department. This is essential to ensure smooth working between the department concerned and the composing room. Marking-up copy and giving necessary instructions, before passing it to the mechanical composition department, is generally the responsibility of the "clicker". He usually decides the portions to be hand or mechanically set and arranges the work of the compositors assisting him.

Generally, all mechanical composition is galley-proofed and, after the reading of "first-proofs", corrections are made by the compositors working on the particular job. If the work is a magazine or book, or consists of a large amount of text matter in jobbing work, it is usual to re-proof after correction and a further revision is then made by the proof-reader. This proof (called a "revise") allows the remaining corrections to be made; galley proofs may then be submitted to the customer, prior to making-up into pages. Sometimes the make-up of the pages is done before the customer sees any proofs. This is not, however, good practice; in better class work it is customary, especially if there is much text matter, to submit galley proofs to the customer in the first instance.

On receiving the author's or customer's corrections, the galleys will be corrected and pages will be made up (if not already done), and the corrections revised on page-proofs. The author will usually require separate page-proofs for

further revision; these are pulled on a proofing press, three or four pages at a time, on slip or column galleys.

Following make-up and proofing, the pages are prepared for imposition in sheet form. This work is highly specialized and, in some printing offices, it is the work of compositors (or stone-hands) who are employed to do nothing else. In other offices the "clicker" of the job arranges for his own assistant compositors to perform this work. Each firm will have its own arrangements regarding this important aspect of the compositor's work, but every compositor should be capable of handling imposition. When the pages are arranged (according to the imposition scheme agreed between composing, letterpress machine and binding departments), they are secured in the appropriate chases and sheet-proofs are then taken. These may, if required, be submitted to the author or customer. It is usual, in this connection, to proceed with the imposition of the pages while the page-proofs are being revised by the reader. The final corrections are then made on the imposing surface (or stone) immediately before sheet-proofing the formes. When sheet-proof corrections have been rectified the formes are ready for the letterpress machine department, where a complete book-proof may be taken before actually running-off copies.

The work of the compositor engaged on display setting differs from magazine or book work primarily because he is called upon to exert his skill and taste in the setting and assembly of jobs of varying kinds. The greater part of display work calls for setting display lines of type, setting by hand a limited amount of text matter, assembling such items with mechanically composed matter and with blocks. In this work both his accuracy as a craftsman and his skill as a designer are allowed full expression, and to be successful the compositor must use type both appropriately and with lively sense of fitness for purpose. Very often he will be required to work from a prepared layout in which the plan and detail of the setting has already been determined. Here again, his intelligence as a display compositor will enable

him to translate the designer's *intention* more happily and accurately; he will have the necessary foresight to make a more successful job than the indifferent compositor who is able only to set and assemble type.

The compositor specializing in magazine or book work is required to work both methodically and carefully and to have an appreciation of good style in presentation, whether it involves letter-spacing of headlines, insertion of captions to illustrations, or the make-up of pages containing illustrations, and similar matters. Except in the rarest instances, he has, to-day, to handle mechanically-composed matter only. Apart from the occasional hand-set heading to an article or the setting of advertisements carried by the journal (in magazine work), there is little difference between the work of the book or magazine compositor.

Newspaper production has to be both highly organized and expertly planned to ensure time-tabled working. The use of large display sizes of type, mechanically set by various machines, has been greatly extended in recent years. Some jobbing setting, generally of advertisements, is done by the hand compositor. The work of quick make-up or change of make-up on the imposing surface calls for alertness and competent craftsmanship. When newspapers are printed from rotary plates, the formes are imposed in special foundry news chases which have type-high rims and are fitted with a powerful mechanical locking-device. Accuracy, speed, and reliability are great attributes to anyone aspiring to this section of the trade.

The majority of newspapers are entirely slug-set on Linotype or Intertype and Ludlow machines. The reason is that slugs (or solid lines of type) are easier and safer to handle than matter comprising separate type characters. *The Times*, however, uses both slug- and Monotype-set matter.

CHAPTER 2

COMPOSITION

THE young compositor eager and anxious to make good progress in mastering the technique of his craft is often in the position of "attempting to run before he is able to walk". It is for this reason that some general hints, directed towards his technical competence, are given here. In compositor's work, probably more than in any other section of the printing industry, it is essential that the correct method of performing all operations be followed; only then will workmanship and dexterity result. These and other matters are dealt with in the following chapters.

It should be stressed that the craft of the present-day compositor compared with that of his predecessors has broadened considerably. The working conditions have also become healthier in every way. The requirements of present-day Factory Acts and the gradual changes in the equipment and work of the composing department have resulted in making the vocation of compositor a healthy one. A word of caution and warning is, however, offered to the young compositor: it should be made an *unfailing habit* to wash hands after using type and before eating; similarly, a walk should be taken at the midday break to gain that physical and mental recuperation which is given by fresh air and which will enable him to work well indoors for long periods.

The first concern of the compositor is his ability to remain standing, throughout each day, performing his allotted tasks without unnecessary exertion or strain. The beginner, often unwittingly, adopts the wrong stance: he stands first on one foot and then on the other, instead of taking a comfortable well-balanced position, on both feet, in front of his case. The height to the frame or cabinet is extremely important. It will be found that the compositor is most comfortable if his elbows are approximately level with the lower

edge of the case when mounted. If short in stature, it will be an asset if he obtains a platform to raise himself to the right height. Given a well-balanced stance, in an upright position, firmly on both feet and at the correct height to the frame or cabinet, the young compositor will soon experience little fatigue even at the end of the day's work. Stooping should be avoided at the outset, and the importance of working in good light is, of course, paramount.

The compositor should always arrange his case or cases (furnished with the appropriate wood and metal furniture for securing the matter), copy and galley before beginning to set.

MAKING THE MEASURE. Before beginning to set type it is necessary for the composing stick to be set to the required measure of the page or column. This is made to pica (12 point) dimensions, except in certain kinds of table-work or when an odd half-pica (6 point) dimension is required. Several methods of making the measure are practised, such as by the use of a piece of point-cut lead, rule, or metal furniture, or by means of quotations, or of 12 point quads; but none of these is really satisfactory, as each is open to objection on some ground. The so-called "allowance for squeeze" has to be made if setting the stick by any of these means. (This is to make the measure slightly oversize so that the pages of assembled types will, when secured in the imposed forme, give the requisite amount to be squeezed to the width of the pages.) Each of the foregoing methods makes insufficient allowance for the fact that assembled characters tend to take up more space until squeezed; neither does any one of the methods have a ready check against inaccuracy possible by the inclusion of a worn or battered lead, rule or piece of furniture, or wrong-fount quadrat or quotation. The best method of making the measure is, therefore, by the use of the appropriate number of characters of any 12 point type fount which are set sideways (with the nicks to the left or right). For convenience,

it is better to use a wide character, and for this reason the lower-case m is usually used (although w is equally suitable). When set to the measure the line appears so:

mmmmmmmmmmmmmmm

(i.e. for 15 ems measure). By checking the nicks carefully, a wrong-fount character is at once noted and any inaccuracy (through not using a 12 point unit) avoided. In addition, the assembled separate characters will require no "allowance for squeeze". When the line of m's is set and verified, the slide of the composing stick should be adjusted sufficiently to hold the line firmly. The thumb-screw, or thumb-lever, is then tightened, and should on no account be loosened until a change of measure is required.

SETTING THE TYPE. A setting-rule of appropriate measure is inserted in the stick before setting begins. When beginning to set type, the beginner, who must have learnt the lay of the case, will be tempted to pick up each character and to look at it while placing it in the composing stick. *This should be avoided.* The character should first be looked for, by noting both the head and the nick of the type, then picked up by the head with the first finger and thumb of the right hand, and placed in the stick (which is held lightly in the hollow of the left hand), nick upwards, *without looking at it.* The thumb of the left hand receives and maintains the type in the stick and follows up each succeeding character until the line is completed. The next character is looked for while the previous one is being placed in the stick. In this way a regular and smooth rhythm will be created and maintained and the desired average speed of 1,000 ens per hour attained. It will be found helpful to allow the left hand (holding the stick) to follow the right hand so that the stick is near to the right hand when picking up the character and has a shorter distance to cover, thus saving time and movement.

At the end of each word a space is inserted from the *thick space* box, which is nearest to the compositor, in the centre

of the lower-case. When the line is completed it should be read carefully, holding the stick in the left hand throughout and with the nicks of the characters upwards. The characters are read from left to right (as in normal reading), the difference being that the types are upside down and reversed. The student will soon learn to become proficient at reading type in this position. It is essential to check the line for errors, *before* attempting to space it to the measure.

The main differences are seen in such letters as:

b d p q n u

and the student is advised to note them so that he may recognize them in combination with other letters. The line of the nicks should always be checked, for it is then easy to correct a wrong fount or inverted character in the line. Attention should be given to punctuation marks, since these are often missed in checking the line.

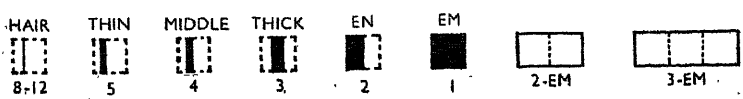


FIG. 1. SPACE AND QUADRAT RELATIONSHIPS TO THE EM QUADRAT.

SPACING AND JUSTIFICATION. When a line of type has been set, read, and corrected in the stick, it is ready to be spaced to fill the measure; this is termed "justification". This has to be performed so that, upon completion, the spaces in the line *appear* equal to the eye. To achieve this, the careful compositor will always make slight allowances for the space after a comma or for a space adjacent to a sloping letter; thus the combinations of such words as "very well" and "to one" will need less word space than that between such words as "had little".

The spaces supplied with every type fount bear a definite relationship to the *em quad*. Fig. 1 illustrates this.

It will be seen that a *hair space* varies from one-eighth to one-twelfth, a *thin space* is one-fifth, a *middle space* is one-fourth, a *thick space* is one-third, and an *en quad* is one-half the *EM QUAD*. This knowledge is used in justification.

Order of Spacing. The following shows the order and combination of spaces required to decrease or increase correctly the word spaces from the average *thick* space:

To decrease	*Average*	*To increase*
Middle	THICK	Two thins
Thin		Thin and middle
		En quad
		Thick and thin
		Thick and middle
		Two thicks

It will not always be possible for each word space in the line to be identical, but for practical purposes *any two adjacent space combinations in the above list* may be used in the same line. The line will then, optically, appear to be equally spaced between the words. For instance, if at first the line is set using thick spaces between words, and after reading and correcting the line is not quite filled and it is impossible to include the next word (or convenient syllable, if the word is capable of division), each thick space will have to be increased to two thin spaces. If still not fully justified one of the thin spaces in some of the word spaces will need to be altered to middle spaces until the line is fully spaced to the measure; this will then be correctly justified. But if in the same line a third kind of spacing occurs between words it will *not* be correctly justified. Conversely, if the line, as originally spaced with thick spaces, needs to be reduced to complete a word at the end of the line, the thick spaces should be changed to middle spaces as far as necessary. If there is still insufficient room, further reduction should be made by changing middle spaces to thin spaces.

A source of great trouble, caused by bad spacing, often occurs where galleys of Monotype matter are hand corrected. The fault is usually due to the Monotype spaces not being cast to the correct relationship to the em body (above).

The remedy is obvious; a well-organized composing department will have *correct-width* thin, middle, and thick spaces, as well as true en and em quadrats, of all Monotype founts that are case-laid for correction purposes. (Note: the Monotype em quad., as cast with text matter, may be of *any*

FIG. 2. LIFTING TYPE FROM THE STONE FOR TRANSFER TO GALLEY.

Note the position of the fingers gripping at front, back and ends of lines.

width, according to the "set" width of the fount, and care should always be taken to see that the em quads *are always used with the nick the correct way*. Failure to observe this simple precaution causes much mis-justification and trouble on the imposing surface.)

When the line has been completed and justified, the setting-rule is placed over it preparatory to setting another.

The copy is progressively set, line by line, until the composing stick is filled. (At first the junior student will prefer to set only a few lines and then transfer them from the stick to the galley because of the weight of the lines in the stick and, at first, the difficulty of removing a stickful of type.) When the stick is filled, the lines have to be transferred to a temporary receptacle or tray, called a galley The stick is placed above the galley on the frame and a lead or rule is placed both at front and back of the lines. The matter is transferred to the galley, in the manner described when lifting lines for corrections to be made (*see* Chapter 8, p. 89).

It is essential to press the ends of the lines firmly, to grip them tightly between the leads or rules and, above all, *to carry them horizontally*, resting upon the lower lead or rule, while transferring to the galley. In this way many accidents in transferring lines will be avoided. Fig. 2 shows the correct position of the hands when lifting composed matter.

DIVISION OF WORDS, STYLE, ETC. The compositor sometimes resorts to the division of a word by means of a hyphen at the end of a line. This should not be practised unduly, but used rather as a legitimate aid to uniform and relatively close spacing, when the division is advisable.

Most text matter is over-spaced with consequent loss of cohesion and legibility in the setting. Uniformity of spacing between words in succeeding lines is the hall-mark of excellence in the composition of text matter. Only an indifferent compositor would permit adjacent lines to be spaced with close and wide spacing respectively. (*See* also *Bookwork*, "Division of Words".)

Style in composition, whether literary or typographic, has to be considered in relation to the "house style" of the printing office. All these matters are discussed in *Bookwork*.

AUTHORS' ABBREVIATIONS IN MANUSCRIPT. As an aid to reading an author's manuscript (*abbreviated* MS.; *plural* MSS.), the apprentice-compositor is advised to

memorise the more common forms of manuscript abbreviations adopted by authors. Although the greater part of copy is, to-day, in the form of typescript, certain of the original manuscript abbreviations are carried into typescript. Where (as in certain journals) actual manuscript is still supplied, many abbreviations are in general use, and the following list is included for the guidance of the student:

abt	about	*-g*	-ing
acct or a/c	account	*-n*	-ion
affly	affectionately	*mtg*	meeting
aftn	afternoon	*mg*	morning
agn	again	*occn*	occasion
agst	against	*o*	of
amg	among	*or*	other, over
-ce	-ance, -ence	*p*	page
bec	because	*pp*	pages
bn	been	*pop*	popular
bt	bought	*qy*	query
chn	chairman	*qn*	question
cmtee	committee	*quot*	quotation
cd	could	*sd*	said
difce	difference	*sevl*	several
difclt	difficult	*sh*	shall
esp	especially	*shd*	should
evg	evening	*t*	that
-r	ever	*/*	the
evy	every	*thr*	there
ffy	faithfully	*tho*	though
f	for	*ty*	truly
fm	from	*v*	very
gd	good	*whr*	whether
govt	government	*wh*	which
gt	got	*w*	with or what
hd	had	*wt*	without
h	have, *etc.*	*y'day*	yesterday

CHAPTER 3

CORRECTIONS

THE correction of hand-set and Monotype composition is usually performed by the hand compositor, whereas in the case of Linotype, Intertype, Typograph and Ludlow systems the machines have to be utilized to produce a corrected slug. It has been pointed out that time is saved when the compositor makes it a practice to read his lines thoroughly *before* proceeding to justify the line to the measure. This is also true of all slug systems of mechanical composition, and the operator should read carefully the assembled matrices before dispatching or beginning a new line. The Monotype keyboard operator cannot check either type or matrices, since he is perforating a spool of paper, but should he, however, realize or suspect a mistake he may check the error by "reading" the perforations in the paper spool. If a major error has been made, he is able to cancel the line already tapped, and reset it, thus avoiding waste of time on the casting machine and in correction.

PROCEDURE. The general procedure is to make both first-proof and revise-proof corrections while the matter is on the galley. Similarly, authors' proof corrections in book-work are preferably made on the galley before the pages are made up. In urgent or cheaper work, authors' proofs may be left until pages are made-up, but this is not very satisfactory, for obvious reasons. It is essential that all corrections of hand-set or Monotype matter, involving change of letter width (thereby affecting the justification of the line) should be made in the composing stick set to the correct measure. In this connection, when correcting Monotype matter, the rule for making the measure of the composing stick (*see* previous chapter) is *not* followed. In order to be certain that the stick is set to the exact measure

of the mechanically composed lines, it is safer to make up the stick to an actual normal line from the galley to be corrected. The reason for this is that any variation in measure, however slight, which could and does sometimes occur owing to careless or faulty operators, is thus kept constant. It would be valueless to have corrected lines dead-true to pica measure when the complete galley is slightly over or under the true measure. For this reason, too, it is wise always to place all leads used in the composing stick (set to the actual measure of composed matter) to determine that they do not bind and so cause trouble later, when imposing the pages.

When making corrections the compositor stands with his right side against the frame or cabinet; this enables him to bend over the galley resting against the lower-edge of the frame or random.

The quoins of the galley are not taken out but loosened sufficiently to permit lines to be easily lifted out. The compositor should place his galley of matter to be corrected on the frame, alongside the case containing the same fount as that in which the matter is set. After setting the stick, the marks on the proof are referred to and each correction is made in turn. In some instances it is unnecessary for the line to be placed in the stick because the correction involves only the substitution of one letter for another of the same width. If this should be so, the line concerned is raised slightly above the remainder of the page by pressing the fingers at the ends of the line and lifting it. The letter to be changed is then easily withdrawn with the forefinger and thumb of the right hand and the correct letter inserted. The line is then pushed down and the letters levelled by tapping them with the fingers.

If corrections involve the changing of a letter of a different width or a change of words, or the insertion or deletion of words in the line, the line concerned must be lifted out and the corrections made in the composing stick, where it may be correctly re-spaced.

When correcting a line it is lifted from the galley to the composing stick with the aid of the setting-rule. The second finger of each hand should press the ends of the line firmly, while the forefinger and thumb grip the front (or nick side) and back, respectively. The setting-rule is preferably placed behind the line to be lifted so that when the line is taken from the galley it rests horizontally on the rule while it is transferred to the stick. This method of lifting a line should also be adopted whenever composed matter has to be transferred to galley, etc. (*see* Chapter 2, p. 84).

[Sometimes major corrections occur such as an "out" (words omitted from the copy) or a "double" (words or a passage set up twice), and these involve considerable alterations. In such instances the matter has to be "over-run", or rearranged or remade up. The line is placed in the stick and the words after the insertion (which are "driven out") are placed along the edge of the galley and the new matter inserted.

The use of a special "over-run galley" (a small galley which clips or hangs from the top edge of the case) is often resorted to when a long over-run has to be made. The paragraph concerned is placed on this galley with the front (or nick side) of the lines towards the right-hand end of the galley. The *first* line is then in the most accessible position, at the left, for removing portions as required during the over-run. When the insertion has been completed the words driven out will be used to begin the succeeding line, and this process is continued with the over-matter at the end of each line throughout the following lines until there are no more words to turn over. When this stage is reached the matter is said to "end even". Naturally, when an over-run does become necessary, the compositor attempts to "end even" in the minimum number of lines.

The making of corrections in slug-set composition is not of course the responsibility of the hand compositor, since the new slugs will be prepared by the machine operator. The matter having been reset wherever corrections occur,

it is usual for the hand compositor to bear the responsibility for inserting the new slugs appropriately. A word of caution is perhaps necessary here. The fact that slugs are so easily handled induces an attitude of carelessness; the compositor should always be on his guard against inserting slugs in the wrong place or even upside down. Having removed the furniture from the galley, it is good practice partially to lift the original slug and then to insert the new slug (from the top edge of the galley) *before* completely removing the one it is to replace. Similar care is necessary when changing several lines that occur together as a result of an "over-run" when correcting. The ribs which occur at the front of the slug are a guide to their insertion the correct way round.

When correcting galleys of Monotype matter, the compositor looks for and removes what are called "starred-lines". These are lines in which an error was made by the keyboard operator, but which he had noticed, and consequently "starred" (causing a special high-quad, with a star marking, to be cast at the end of the line). The lines are removed because the keyboard operator will have reset the matter in the succeeding line.

Note: It is quite unnecessary and even inadvisable to use tweezers when correcting matter on galley, unless it should be table work involving small boxes and short measures. Far too many characters are battered by the misuse of tweezers, which should be used very carefully and rarely, particularly with founders' type.

The use of correct width spaces (related to the true em body) is essential when Monotype matter is to be corrected by the hand compositor, if accuracy of spacing and justification is to be maintained. (*See* reference, pp. 82–3.)

READERS' MARKS. Corrections made by the proof-reader are marked on all proofs, and to simplify the work of the compositor certain symbols have become general in the trade. These marks are generally, although not always, used by authors and publishers.

Consideration has recently been given to the establishment of a standard for Printers' and Authors' Marks by the British Standards Institution, in consultation with the interested bodies. The list on the following pages shows the newly standardized marks:

SYMBOLS FOR CORRECTING PROOFS[1]

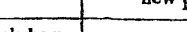
No.	Marginal mark	Meaning	Corresponding mark in text
1	/	Sign to show that marginal mark is concluded	
2	ⅆ	Delete (take out)	/
3	ⅆ/	Delete and close-up	ⅆ above and below letters to be taken out.
4	#	Delete and leave space	/
5	stet	Leave as printed	. . . . under letters or words to remain.
6	caps	Change to capital letters	≡ under letters or words to be altered.
7	s.c.	Change to small capitals	= under letters or words to be altered.
8	caps + s.c.	Use capital letters for initial letters and small capitals for rest of words	≡ under initial letters and = under the rest of the words.
9	l.c.	Change to lower case	Encircle letters to be altered.
10	bold or clar	Change to bold type	~~~ under letters or words to be altered.

[1] Reproduced from B.S. 1219/1945 by permission of the British Standards Institution, from whom copies of the specification may be obtained, price 2s., post free.

No.	Marginal mark	Meaning	Corresponding mark in text
11	*ital*	Change to italics	—— under letters or words to be altered.
12	*insert rule*	Underline word or words	—— under words affected.
13	*rom*	Change to roman type	Encircle words to be altered.
14	*wf.*	(wrong fount) Replace by letter of correct fount	Encircle letter to be altered.
15		Invert type	Encircle letter to be altered.
16		Replace by similar but undamaged character	Encircle letter to be altered.
17*		Substituted letters or signs under which this is placed to be ' superior '	Encircle letters or signs to be altered.
18*		Inserted letters or signs under which this is placed to be ' superior '	
19*		Substituted letters or signs over which this is placed to be ' inferior '	Encircle letters or signs to be altered.
20*		Inserted letters or signs over which this is placed to be ' inferior '	
21	 *Enclosing ligature or diphthong required*	Use ligature (e.g., ffi) or diphthong (e.g., œ)	 enclosing letters to be altered.
22*	*Write out separate letters followed by* /	Substitute separate letters for ligature or diphthong	/ through ligature or diphthong to be altered.
23		Close-up—delete space between letters	 linking words or letters.
24	#	Insert space	
25	# >	Space between lines or paragraphs*	
26*	*eq* #	Make spacing equal	⊥ between words.

* Amount of space may be indicated.

No.	Marginal mark	Meaning	Corresponding mark in text
27	less #	Reduce space	between words.
28	trs	Transpose	between letters or words, numbered when necessary.
29	centre	Place in centre of line	Indicate position with
30		Indent one em	
31		Indent two ems	
32		Move to the left	
33		Move to the right	
34		Move lines to right	at left side of group to be moved.
35		Move lines to left	at right side of group to be moved.
36		Move portion of matter so that it comes within the position indicated	at limits of required position.
37	take over	Take letter or word from end of one line to beginning of next	
38	take back	Take letter or word from beginning of one line to end of preceding line	
39		Raise lines	over lines to be moved.
40		Lower lines	under lines to be moved.
41		Correct the vertical alignment	
42		Straighten lines	through lines to be straightened.

No.	Marginal mark	Meaning	Corresponding mark in text
43		Push down space	Encircle space affected.
44		Begin a new paragraph	 Before first word of new paragraph.
45		No fresh paragraph here	 Between paragraphs.
46		The abbreviation or figure to be spelt out in full	Encircle words or figures to be altered.
47		Insert omitted portion of copy NOTE. The relevant section of the copy should be returned with the proof, the omitted portion being clearly indicated	
48		(Caret mark). Insert matter indicated in margin	
49		Insert comma	
50		Substitute comma	
51		Insert semi-colon	
52		Substitute semi-colon	
53		Insert full-stop	
54		Substitute full-stop	
55		Insert colon	
56		Substitute colon	
57		Insert interrogation mark	
58		Substitute interrogation mark	
59		Insert exclamation mark	

No.	Marginal mark	Meaning	Corresponding mark in text
60		Substitute exclamation mark	/
61		Insert parentheses	ʎ ʎ
62		Insert (square) brackets	ʎ ʎ
63		Insert hyphen	ʎ
64		Insert en (half-em) rule	ʎ
65		Insert one-em rule	ʎ
66		Insert two-em rule	ʎ
67		Insert apostrophe	ʎ
68		Insert single quotation marks	ʎ ʎ
69		Insert double quotation marks	ʎ ʎ
70		Insert ellipsis	ʎ
71		Insert leader	ʎ
72		Insert shilling stroke	ʎ
73		Refer to appropriate authority anything the accuracy or suitability of which is doubted	Encircle words, etc., affected.

NOTE. When fresh matter not in copy is to be inserted, the caret mark is to be used in the text and 'Take in A' (B, C, etc., as the case may be) written in the margin, the additional matter, whether written on the proof, or on attached slips, being lettered to correspond. In the case of large insertions, a horizontal arrow in the margin pointing between the lines replaces the caret mark.

Usually the character or word to be corrected is marked where it occurs in a line and the appropriate correction shown in the outer margin. If an insertion is required the caret mark is used to indicate this or, if a substitution, the wrong letter or word is marked through with a stroke and the addition or substitution is then written in the margin against the line concerned. (The caret mark or the stroke is also placed alongside the marginal mark.) Generally, proof-readers make the marks in either left- or right-hand margins apply to corrections in their respective halves of the lines; they should always appear in order, from left to right.

PROOFING. When all the corrections are completed, final proofs for the customer are usually taken. In the case of jobbing or display work this may merely mean hand-proofing by a compositor on small proofing presses according to the job concerned. If, however, the job is a folder or booklet, in one or more printings, it may be proofed on a cylinder proofing press, having a lay-board and lay-guides to obtain correct positioning on the actual paper to be used and accurate register of colour formes. In large or complex work and in bookwork, where large formes are required to be proofed, it is the practice to have the proofs taken on the actual cylinder machines in the letterpress printing department. On occasion it is also possible to expedite production, where required, by taking proofs on the machine. Following this, "make-ready" is proceeded with while the final proofs are checked by the customer, author or publisher. Any last-minute corrections would then be made while the formes are on the machine.

In most large printing offices, however, a pressman is kept especially for proofing formes in order that good finished proofs may be sent to the customer. Both power and hand cylinder proofing presses are used (*see Proof and Platen Presses*). Small jobs are more generally proofed by the compositor on the proofing presses available to him if an undue number of proofs is not required.

Reference should be made to the last sheet-proof which is always taken by the machine-minder before running off the job. This is usually taken when position has been obtained and during the process of making-ready for the run. A special reader (called the machine-revise reader) is generally engaged solely on this important work. It is his duty and responsibility to make the final check of each forme before printing is begun. Any corrections found to be necessary at this stage are made by a compositor on the machine (unless it is platen work, when the forme is easily removed to an imposing surface). The compositor should insist always on checking any corrections, by having a further sheet pulled, to satisfy himself that the corrections are accurately made.

CHAPTER 4

MAKE-UP AND ASSEMBLY

THE most interesting and skilful work of the compositor is probably that of making-up and assembling various kinds of work.

The term "make-up" in its narrowest interpretation would include only the actual making-up of pages in bookwork and magazine or newspaper production. It is, to-day, more generally understood to mean the putting together or building up of the elements of both composition (whether hand or mechanically produced) and illustration (in the form of line and half-tone blocks and stereo- and electro-typed duplicates) in any display job. For instance, an invoice form or advertising folder have each to be made-up, and, where required (if more than one-colour printing), split into colour formes.

The work of make-up in magazine and bookwork is specifically dealt with in *Bookwork*, therefore reference will be made here only to jobbing or display work.

DISPLAY. The various portions of a display job may have been mechanically set, either for the text matter only or for both display headlines and text matter. If the former, the displayed lines and all other lines required to be set in special types would be hand-set by the compositor. When the various portions have been set, their assembly is made on a galley of appropriate size. All blocks (which should be underlayed and checked for type-height) are tested for squareness and are then accurately fitted into their respective positions in the type-setting. The compositor should never resort to guesswork when fitting blocks to type. The mounts to which the plates are affixed may or may not be cut to accurate point system dimensions (generally they are of any size to accommodate the plate thereon, and it is

unfortunately rare to find a mount accurately trimmed to pica dimensions). In consequence, the first thing the compositor should do is to ascertain the true dimensions, and the only accurate method of doing this (unless precision gauging machines exist) is to use a composing stick. By placing the block in the stick, the nearest pica (12 point) or, if convenient, half-pica (6 point), unit may be gauged by the use of metal furniture. Having set the stick to this metal furniture, it is only necessary to place the block in the stick and to add the required thickness in leads to pack out the space at the sides of the mount to fill the measure exactly. When this has been done for one dimension, it is repeated, to the nearest accurate measure, for the other dimension. In this way *a known measure* is found for each dimension of the block (both width and depth), and it is, therefore, a relatively simple matter to insert the block, with accompanying spacing, in the type matter, where required, with accuracy and perfect justification.

Whenever possible, in building up a complex piece of composition, it is wise to do the work in such a manner that it is built unit by unit. A rigid adherence to the Point System, by careful counting and assessment of all assembled items, is essential, and is the only accurate method of working. Care and accuracy in the use of all spacing materials, correct allowance for rule thicknesses, borders, or other decorative items, accuracy in the cutting and use of leads and clumps (in particular), the avoidance of battered quotations or other spacing material, and the use of metal (point-cast or point-cut) spacing materials, are essential if make-up is to be both expeditious and satisfactory. It is true that the inefficient compositor goes out of his way to produce an inaccurate or "botched" piece of composition. There is no reason why even the most difficult or intricate setting should not be perfect in its justification and so cause no trouble when the imposition stage of production is reached. A great deal of time is too often wasted on the imposing surface through faulty craftsmanship in make-up and setting.

An immediate cause of inaccurate work is the use of *wooden furniture within a job*. This should never be practised, if it can be avoided, although it is appreciated that in many firms, owing to poor management, the necessary supply of accurate metal furniture and quotations is not available. By reason of variations in temperature and humidity, wood is a most inaccurate material for spacing *within* a job. Its use is generally, and advisedly, restricted to the furnishing of formes when imposing pages. If essential within a job, it is alternated with metal furniture.

CATALOGUE WORK. In catalogue or other heavily illustrated work it is often necessary to arrange to insert numerous small line or half-tone blocks within a page; also the accompanying type matter (descriptions, prices, etc.) is often set in small size type and to various measures. These pages take a great deal of time to make-up accurately, mainly because block mounts are of various sizes and may have to be cut to permit the close-up insertion of text matter, and also because of the short and varying measures of the type panels. If it is possible to make use of plate-mounting high quadrats or quotations, much time will be saved, the work simplified, and the accuracy of make-up ensured. These special quadrats, obtainable in various sizes, are first set into the rectangular dimensions of the page. Wherever type matter is to appear, it is placed in position by the removal of the appropriate area of quadrats. To ensure accuracy of position it is a good plan to cut out closely a proof of each of the illustrations to be inserted and lightly paste them temporarily in position, face side down (to obtain reversal). In this way the relative positions for the type may be readily ascertained. The actual plates may then (when the type matter for the page has been inserted) be tried in position on the remaining high quadrats or quotations and any final adjustments made before pinning them down. The value of using plate-mounting quadrats or quotations in catalogue work will be at once apparent

because there is no need to test and adjust the measures of each small block-mount. The page, too, will be of accurate dimensions, without undue verification. Similar occasions for the use of other plate-mounting materials, in the form of dowel mounts or special bases capable of being used for build-up within a job, will at once be apparent. These call for no special comment since the method of using them and their advantages over the normal wooden mount are obvious.

RULES AND BORDERS. When piecing a border of rules or decorative units or slugs, particularly if combined or multiple, the compositor must be a precision craftsman. Here again, if the point system is rigidly adhered to, accuracy and perfection in the joining or piecing, especially at mitred corners, is readily obtainable. It is essential for the combined thicknesses of rules, leads, and/or borders, used together, to be *a known number of points*. The resultant amount of spacing between border and text matter may then be accurately determined. With a mitred border it is wise to adopt an "interlocking" method when placing the surrounding spacing material between the border and the type area. If a clump of correct length to fit the *inside* mitred dimension of the top and bottom rules is placed in position, it is then possible to add the whole of the side-margin spacing material (between rule and type-matter) of the appropriate length of the *inside* mitred dimension of the side rules, *less* the thicknesses of top and bottom clumps. The type matter, with spacing at head and foot to the same measure, is then placed in position, and the whole will form a rigid and accurately finished setting.

The use of irregular sizes of founder's or Monotype or other border units such as 7 point or 10 point, etc., demands careful make-up. It is essential that 1 point and 2 point leads should be available to obtain an accurate point system build-up. If the overall dimensions of a job are to be in picas, it may be necessary for the border to appear slightly under this in both dimensions—but the inclusion of the requisite

make-up lead should be remembered in order to obtain true (pica) overall dimensions and to avoid difficulties in imposition.

Sometimes it is desirable for the surrounding rule border of a job to be unmitred, generally when accurate point-cut rules are available and usually when only a single rule or simple combination border is required. In these instances, it is preferable for the top and bottom rules of the border to be the full measure or width intended, so as to overlap or enclose the down side rules. The allowance for the thickness of the side rules will then be made from the down-side spacing material (which is to the same length as the down rules) between border and type-setting. When using 1½ point rule, the *extra* depth (3 point) occasioned by abutting the top and bottom rules to enclose the down-side rules would be ignored. If thicker rules are used, say 3 point or 6 point, the correct adjustment of the down-side rules and spacing material will be made, in order that the true overall depth of border is obtained. This is termed "butt-end" joining.

USE OF MITRERS AND CUTTERS. The student's attention is called to the proper and careful use of mitring and cutting machines when rules or leads are cut or mitred to special lengths. In the better type of machines a form of micrometer gauge is fitted, allowing accurate mitring or cutting to quarter-point settings. It is, however, unwise to assume that an exactly true dimension will be obtained unless the accuracy of the "zero" setting is first ascertained. This is best done by first cutting a rule or lead to an *exact pica* (12 point) dimension, by setting the normal slide to the appropriate notch. After cutting this lead or rule, adjust the micrometer setting to "zero" and then test the length of rule or lead just cut in conjunction with it. It should fit exactly from slider gauge to micrometer gauge if these have been so set to be the correct pica dimension apart. If the micrometer is of the revolving type it is quite possible that it could (if so left by the last compositor) be a complete

revolution out of setting (probably 5 or 6 points, under, or over, the setting) for the piece of rule or lead with which it is tested. Any adjustment is then made to the micrometer so that the "zero" setting is correct for the test piece of rule or lead. The machine having been thus set, it is possible, by the appropriate adjustment of the slider and the micrometer, to cut the rules required to the correct dimensions or to odd points or fractions thereof.

PIECED FRACTIONS, ETC. The piecing of fractions and of prices in display work needs particular attention, and it will perhaps be helpful to the junior student to refer to this. If the fraction is an unusual one, or of a size larger than that normally found in the composing room, it will have to be pieced. With fractions, it is a simple matter to fit two figures, one under the other, with a small piece of brass rule (cut to the appropriate width) between them, and to use small pieces of leads to make the total depth agree with the size of the body of the type with which it is to be used. Care should be taken, particularly in larger display sizes, to see that the total *appearing size* of the pieced fraction coincides with the actual figure-height of the display type which is not necessarily that of the body size of the type. When a price occurs in display work and the solidus (shilling stroke) is required, a piece of brass rule may have to be used and placed diagonally between the figures. This is more generally obtained by inserting an em quad of small size at the top and bottom of the type body, but on opposite sides of the rule, thus forming a diagonal. The better method (if available) would be to use angle quadrats of small size or perhaps to file a pair of quadrats to suit. The weight of the rule face should harmonize with the figures with which it is used; similarly, the design of type used for figures in pieced fractions should be in keeping with the type character and figures with which they are used. If diagonal fractions have to be pieced, they are made by using the appropriate sized figures in combination with brass rule, but they will

usually require extra spacing of smaller size to be placed inside, against the rules, in order to retain the figures in a vertical position.

COMPOSITION OF POSTERS. The compositor uses large-size mahogany composing sticks to suit the size of poster required. Often the spacing equipment of the office will determine the measure to which all lines are set, as it would be time-wasting to piece all furniture or to cut new lengths to a given measure (a bad practice unless accurately performed). Very often standard lengths of furniture (usually wood) are kept for poster work. The lines of type and wood-letter are assembled directly on to the imposing surface, and it is better to leave final spacing and justification until all lines have been set and placed in position. When the lines are assembled in their relative positions, final adjustments or changes may be made before justification. After justification and general spacing, the whole is locked in chase for proofing. If the forme contains much wood material, great care should be taken when locking-up. Use wood and metal furniture alternately to avoid springing; also, for the same reason, it is preferable to use mechanical quoins.

SETTING ACCOUNT-BOOK HEADINGS. Another kind of job, although only occasionally met with, is the setting of headings for machine-ruled account books, ledgers, etc., and the student may well produce an impracticable setting (from the machine-minder's point of view) if he is not aware of the best method of composition. A slip or column galley is turned so that its short enclosed side is at the left when on the random or frame. The size of type, if to be determined, should be such that the widest line in any given column may be accommodated as well as allow the appropriate fitting of the number of lines to the depth. The compositor *will not work to the point system when setting*, but will fold the specimen ruled sheet (for which he is setting the heading) and place it in position on the galley, so that he

may work with it immediately above the lines he will set across the full length of the galley. It is best to set one column at a time *to the measure appropriate to the ruling*; this may be to units (ems or ens) of the type size in use but some allowance for breaking up with leads between many (preferably all) of the columns is desirable. When a column heading has been set in the stick (to ensure uniformity of line length though maybe to an indeterminate measure), it is placed in position at the left-hand end of the galley. One or two leads, cut to correct depth of the number of lines and preferably including thins, are then placed vertically against the completed heading of that column. The measuring off with the specimen ruled sheet will thus allow each column to be set and appropriate lead spacing inserted throughout, until the heading is completed. Slight adjustment of the leads may, it will now be seen, allow the machine minder an opportunity of obtaining the correct fitting of the headings to each column. Special heading chases which avoid "spring" are used for imposition. In order to keep the matter in a straight line, it is advisable to include metal furniture both above and below the actual setting. Occasionally it is necessary for headings to narrow columns to run upwards, in which case the measure to which these lines are set would be the total depth of the number of lines to the deepest heading set horizontally.

The make-up of table and tabular matter is omitted here; because of its importance, a separate chapter (6) is devoted to the setting and make-up of table-work.

CHAPTER 5

SPLITTING FOR COLOUR; TYING-UP; HANDLING MECHANICALLY COMPOSED MATTER

SPLITTING FOR COLOUR. In straightforward jobs, where intended to be printed in more than one colour, it is usual to set and make-up the complete job as though for printing in one colour. After proofing and correcting, it is then possible to proceed with the colour separation, using the proof as a guide to the accuracy of work. The compositor places an empty galley alongside that containing the job. On the new galley he will then place, in the appropriate and relative position, all lines or items which are to occur in the second colour, assuming a two-colour job. Whenever he takes a line or lines from the original setting, he substitutes the correct amount of spacing material in the form of quotations, metal furniture, leads and clumps. In this way, side by side, the two-colour pages are separated and made-up. Great care is necessary to ensure the accurate positioning of all items which are to be in the colour forme. Special attention should be given to the "beard" allowances in display types which are intended to be closed up, slightly, when two lines are to come together in alternate colours. (When making-up as a one-colour job, the "beard" is sometimes wider than the intended spacing between lines of the two-colour setting.)

Time will often be saved if the final registering (as in "beard" space closing, etc.) is left until checked by means of an oiled proof.

If a complex multi-colour job, such as a large folder, is to be split for colour, it would be done direct on the imposing surface when two, three or four formes may (if room is available) be worked on together. In large-size work

where pages as such are not involved, it is not possible to make-up or split for colour on the galley. The use of "skeleton" steel furniture is an invaluable help in these instances as it is accurate and lighter than the use of metal furniture for forming large areas of space. When building-up colour formes it is wise always to include or to allow for some leads in the spaces between items, as between panels of matter, to permit opportunity of closer registration, without having to break up furniture. If colour blocks are to be included in the formes it is advisable to see that there is ample opportunity of registering by imposing them with "register" quoins within the formes. (*See* pp. 122–3.)

TYING-UP PAGES, ON GALLEY AND ON THE IMPOSING SURFACE. When pages are ready for imposition they have to be tied-up with page-cord (a special form of twine) to ensure safe transfer from the galley to the imposing surface. Tying-up requires skill and experience and to be satisfactory should be very carefully done. A lead or reglet is first placed at top and bottom of the page, and these are raised to bring them to the height of the type, i.e. above the rim of the galley. One end of the page-cord is held with the left hand at the top left-hand corner of the page as it rests on the galley (i.e. bottom right-hand of the page as the compositor works on frame). The cord is wound round the page with the right hand, overlapping the end at the top left-hand corner at each successive turn. At each corner it is also essential to see that the cord is placed *below* the previous turn. Four or five times around the page is sufficient, the cord having been gently pulled each time it reached the top right-hand corner. After the requisite number of turns, the end of the cord is taken between the thumb and first finger of the left hand and the loop so formed by pressing the cord at the corner of the page with the second finger of the left hand is pushed down between the turns and the page. A setting-rule or bodkin is used for this purpose, and the loop is then pulled tightly towards the corner of the page.

If using a setting-rule, the "beak" is used to form the loop. The leads or reglet are pushed down to ensure the cords remaining at the approximate centre of the type-height. A page so tied may be moved and safely proofed without shifting off its feet and it may then be lifted without fear of "pieing".

If pages are to be removed from the imposing surface, say for storage or correction after imposition, it is necessary to tie them with page-cord, but this is done in a slightly different manner from that used when pages are on galley. All furniture is removed, a lead or reglet being left at head and foot of the page. The page cord is unwound sufficiently to enable slightly more than enough to be measured off for the depth of the page. The cord is held at this point, in the left hand, at the top left-hand corner of the page (i.e. the left-hand corner farthest from the compositor). The right hand takes the cord across the head of the page to the right-hand corner. The cord is then brought down each side, simultaneously, to the bottom corners, when the cord in the right hand is brought across the foot of the page and overlapped at the bottom left-hand corner. The left hand is then free to steady the page while the remainder of the cord is wound round the page; after three times round it is possible to pull gently on the cord at each corner until the end is reached. When four to five turns are completed the cord is secured at a convenient corner in a similar manner to that described for tying-up on galley.

The page cords are tied in a special manner to prevent knotting when stored. After winding round the fingers of the left hand, and when six to eight inches from the end, the cord is taken in the first finger and thumb of the left hand and held as a loop. The remaining end is wound tightly around the middle of the loop with the right hand. When approximately three inches of cord is left it is pushed through one of the two loops now formed. In this manner, a cord is always ready for use by pulling the free end through the loop.

HANDLING MECHANICALLY COMPOSED MATTER. The compositor of to-day is called upon to handle and assemble, often within one job, several kinds of mechanical composition.

With the Ludlow system, it is possible that he may be able to set his own matrices in the special "stick" and cast the required slugs or lines. (In some offices, however, specialist compositors are employed for this work—generally where the work is highly organized. The great fault in these offices is that, too often, one compositor sets the lines but another compositor is required to perform the make-up. This is, obviously, inefficient as the best results cannot possibly be obtained, for no compositor can translate another's setting in terms of grouping and "whiting-out".)

With the Linotype, Intertype and Typograph systems of mechanical composition, the product is a slug or line of type and these machines are widely used for the composition of continuous text matter. In recent years great developments have taken place to enable display sizes of type to be set by these machines, which are being increasingly used for display or jobbing work. In newspaper, magazine and book-work these machines are also widely used and, wherever speed of production is essential, the slug systems make for ease in handling and make-up.

Where, however, the matter is intricate, as in complex table work or catalogue work involving short measures and small blocks (and last-minute corrections) or for illustrated magazine work involving running round many blocks, Monotype machines are used. The advantage of Monotype is that there are no limitations as to the type of setting. Accurately cast, ranged table work and text matter may be corrected by a hand compositor (even at last-minute on the printing machine). Greater care is, of course, required in handling.

The compositor, when using matter set by any of these systems, should be aware of several important factors if accurate results are to be obtained. The following points are worth attention.

With all slug systems, when using larger type sizes, it is necessary to ensure evenness of face in printing, and the slugs should usually be burnished on the face. Sometimes a small machine is provided for this purpose, or snakestone is used.

Any inaccuracy in body-size is, in slug-set matter, emphasized when lines are assembled into pages. Consequently it frequently happens that pages tend to "spring". When locking-up in chase, the slug-set pages should, after slight tightening of all quoins, be locked up *at the sides first* to minimise any tendency of rising or "spring".

The necessity for handling slugs carefully, to prevent errors of insertion, is mentioned in Chapter 3 ("Corrections"), to which the student is referred.

All slug-set text matter should be *carefully* brushed over the face with a special wire brush to remove any loose pieces of metal. The back of a page (the feet of the slugs) should also be brushed.

Table-work set by slug systems (except Ludlow) may cause trouble if it contains much short-measure setting. Care should be taken to see that all burrs are removed if slugs have been cut to size from a longer measure.

Monotype matter, if badly justified or cast, will cause endless trouble on machine. If a galley is suspected it should be reported to those in charge and, if possible, re-cast. As with hand-set type, Monotype matter (after finger-tightening of quoins) should be locked up *at the feet first* when imposing pages.

Monotype matter, when being corrected, should never be returned to the case; this is essentially necessary with all spaces and quadrats. The latter should preferably be cast for correction purposes and should also be of true point system ratios to the em quadrat. The em quadrats should be true point body width and not of the "set" of the fount in use (e.g. 10×10 points em quads., *not* $8\frac{3}{4} \times 10$ points or other "set" variants).

With a few rare Monotype founts, certain wide characters

are cast slightly overhanging one side of the body, and an underpinning high-space is cast to support the overhang. It is necessary to see that the correct spaces are used when using these characters so that they do not become damaged during printing.

When leading mechanically composed matter, it is a relatively simple and speedy matter to insert leads between slugs. With Monotype, however, more care is necessary. It is well to remove the side furniture from the galley; the lines are then pinched at the ends with the first finger and thumb of the left hand, starting from the left, or bottom line on the galley. As each line is moved slightly to the left, the lead is inserted with the right hand. In this way the work will be done quickly and systematically.

Sometimes leading is automatically performed on the Monotype Caster; alternatively, it is possible on all mechanical composing systems to cast type on a larger body to give the effect of leading. Care is necessary to ensure using the correct type case when correcting Monotype matter so produced.

CHAPTER 6

TABLE AND TABULAR WORK

THE setting of table and tabular work offers great scope to the intelligent craftsman and is, in itself, work calling for a high efficiency in the execution.

It is perhaps necessary to explain that the terms "table-work" and "tabular work" are often confused. Some compositors regard the definitions used in the old "piece-work scales" as satisfactory, but younger journeymen and students will prefer a more logical definition which is generally accepted to-day. Table-work is matter having vertical rules separating columns and may (when it becomes a "boxed table") or may not have surrounding rules. Tabular matter on the other hand is the various forms of ranged matter, sometimes in strict columns, *but without rules*. Obviously, from the hand compositor's point of view, the setting of certain kinds of tabular matter could be more difficult than some kinds of table-work. From the point of view of setting, the two types of work are often entirely different and require a different technique in compilation. They will, therefore, be treated separately in this respect, later in this chapter.

There is, to-day, a great deal of table or tabular setting produced by all forms of mechanical composition and the success with which this is achieved generally depends upon the suitability of the copy to the system used. If matter is slug-set (Intertype, Linotype or Typograph) the making-up of tables by the inclusion of rules surrounding or between columns is generally the work of the hand compositor.

(In certain kinds of simple, ranged-column table work it is possible, by using special matrices, to include the vertical rules between columns when setting each line. The disadvantage of these is that unless the matter is extremely accurately composed there is a tendency for non-alignment of the rules when slugs are placed one under the other.

Similarly, by using special figure matrices cut to cast the character horizontally, columns of figures may be set vertically on one slug.)

When matter, often of very complex table work, has been Monotype-set, the compositor is called upon to complete the work by the appropriate insertion and surrounding of rules, wherever necessary, and as allowed for by the keyboard operator. (The Ludlow system has peculiar advantages in the setting of table work, and reference should be made to *Mechanical Typesetting*.)

In addition to table work produced mechanically, there is still need for a great deal of matter set by the hand compositor and the student would, in any case, do well to become familiar with the method of hand-setting because it will also help him considerably when handling matter set by machine.

The most important item in regard to table and tabular setting is "casting-off" or calculating the size of type in which to set the matter for any given page area. The ease of the subsequent setting depends on accurately casting-off the copy. Some attention should therefore be given to this aspect of the work before beginning to set it.

The first point to be borne in mind is the accuracy of the point system; by careful calculation of the widths of all columns, the thicknesses of all vertical rules, the total depth of all lines and the thicknesses of all cross rules (if not em-rules of the type body), it is possible to build up even the most complicated table with both speed and accuracy. The compositor should, therefore, take every care to ascertain the necessary widths and depths of columns or of headings, in order to fit the matter to a given space.

CASTING-OFF. The compositor, having received the copy and knowing the space he has available for the particular setting, proceeds to make certain calculations to discover the correct width for each column and also to determine the total depth in lines. Should the matter be straightforward

tabular matter, such as may be set in a composing stick to one fixed measure (*see* paragraphs "Setting Tabular Matter"), using the quadded stick method, it is necessary for only the *longest line in each column* to be set adjacent to one another in the stick so that the appropriate space between them may be found. When, however, table work or more complicated tabular matter is involved, it is necessary to proceed in the following manner. The *longest line of each column* of the table is determined and the appropriate column width calculated, based on *ems or ens of the type size to be used.* If, therefore, it is estimated that, say, the first column would make 13 ems, the second and third columns each 6 ems, the fourth column 7½ ems (or 15 ens), and the fifth column 4½ ems (or 9 ens), the total width of all columns would be 37 *ems of whatever type size is chosen.* Assuming the space allowed and required to be filled by the table were 26 picas wide and 1½ point fine face rules were to be used, it will be found that the use of 8-point type would be the nearest practicable size. The total width of all columns would be 37 ems of 8 point, plus the allowance of 9 points for 6 vertical rules, assuming that the outside surrounding rules were included; thus giving a total of 25 picas and 5 points. This is obtained so:

$$\frac{37\times 8}{12} = 24\tfrac{2}{3} \text{ picas} = 24 \text{ picas } 8 \text{ points}$$

$$+\text{rule allowance } (1\tfrac{1}{2}\times 6) = \qquad 9 \text{ points}$$

$$\text{Total} = 25 \text{ picas } 5 \text{ points}$$

It would thus only be necessary to adjust, slightly, one or two columns, wherever most appropriate, to make up the additional 7 points in order to bring the whole to the required total of 26 picas wide.

In the particular example given there are two alternative ways of obtaining the extra width in certain columns: (*a*) one column could be made to an extra *en* quadrat

(4 points) wide and the other to an extra 3 points wide; or (*b*) two columns could be increased in width by the addition of a middle space (4 to the em=2 points), and a third column by an extra 3 points. Similar examples will suggest themselves.

Naturally, when columns contain ranged figures or sterling prices or values, the problem of accurate justification and ranging is greatly simplified since all normal founts of type have the figures cast on an en quadrat body. When allowing for the space between columns on either side of the column rules, it is general to allow an en or an em quadrat as the normal space. This may, when necessary, be reduced uniformly to permit a certain body size of type to be used, especially when the type size is correct for the fitting of the number of lines to the depth-wise dimension.

When calculating the appropriate size of type to use, having found that which suits the width of the table, it is necessary to try the fitting of this size to the depth dimension. Each space line, and each "white" line on either side of horizontal rules, should be counted as a line of the body size quadrats (except when em rules are used for horizontal cross rules). Should the depth be short of that required, after having allowed for the thicknesses of any inserted horizontal rules, it is necessary to consider (*a*) increasing the type size or (*b*) adjusting the whiting and group spacing throughout. If, of course, the type size ascertained for the fitting to the width of the table is exactly convenient and there is little chance of adjustment, alternative (*b*) would have to be adopted when fitting to the depth.

The reason for ascertaining the type size is to ensure that all practical considerations are met and to aid this wherever possible. Only by trial and error in assessing both width- and depth-wise dimensions will it be found possible to arrive at the correct type size to use.

Occasionally, and where suitable, it is possible to arrange and allow for the headings to columns to be set in sizes of type smaller than those used for the body of the table.

Similarly in headings to very narrow columns (as with figures) it is often advisable to allow the smaller size type or the body size type heading to "run up", i.e. to read upwards (*not* downwards), being set vertically instead of horizontally. These variants are useful and often permit the use of a type size which will then more conveniently fit both the width and depth of the columns of the table.

SETTING TABULAR MATTER. When the matter is to be ranged in columnar form without rules, it is often more expeditious to use only one overall measure in the composing stick and to assemble the matter line by line across all columns. If the copy is suitable for this treatment and does not require various and separate measures to be made it is the practice to use gauges of either quadrats or clumps in order that each succeeding line has the appropriate portions ranging under those of the preceding line.

Assuming that the following matter had to be set, the description following will make the manner of setting clear.

London (Victoria)	dep. 12.00	Westbury	arr. 6.20
Maidenhead	dep. 1.40	Reading	arr. 3.05
Oxford	dep. 3.15	Cheltenham	arr. 11.20

It will be seen that the above tabular matter could be set very easily and accurately by the so-called "quadded stick" method. Three sets of gauges would be required as shown:

(*a*) London (Victoria)

(*b*) London (Victoria) dep. 12.00

(*c*) London (Victoria) dep. 12.00 Westbury

and these would be inserted in the stick in the above order while the respective portions of the line were appropriately added. In effect, the use of the gauges of quadrats or clumps (the former are generally more convenient) divides the measure of the stick into smaller measures *and justification is performed* before removing the gauge at the right-hand

of the measure. In this way each portion will range exactly under that of the previous line.

When the matter to be set contains columns of ranged figures or sterling columns adjacent to a column of explanatory matter, it is unnecessary to use the above method because all columns are likely to be uniform, and figures, being cast on en quadrat body, facilitate ranging. For instance, consider the following:

	1934	1935	1936
Aberdeen	21,400	20,784	20,104
Brighton	19,759	18,956	17,351
Cheltenham	3,001	2,901	2,844
Dover	4,236	4,013	4,700

In this instance, the compositor has only to set *the longest item from each column*, in one line in his stick. He may then adjust the space between the columns in order that they will appear correctly spaced. (It is useful to use, *wherever possible*, en or em quadrats between columns to facilitate and expedite the setting. In the above example, the odd spacing, necessary for justification purposes, would occur immediately after the name of the town.) Having set the "specimen" line and adjusted the spacing appropriately, the actual setting may then be started keeping this line in the stick to act as guide for the ranging of succeeding lines.

SETTING AND MAKING-UP TABLE WORK. In the composition of table work it is necessary first to cast off the matter as described earlier in this chapter. The appropriate width of each column will then have been ascertained. The body of the table will generally be set first, and the compositor should set the matter, vertically, column by column. When the first column is completed the vertical column rule is placed in position and the next column proceeded with, and so on. The requisite "white" lines are set with quadrats whenever they occur. The headings may then be set to the same measures as the columns (if in smaller size type, care should be taken to keep to accurate column measures) and

each is inserted above its appropriate column. Any horizontal cross rules are inserted, and these should be *exactly the width of each column*; it is generally necessary to ensure this by special and accurate cutting. All vertical rules are thus continuous, cross rules being broken. Sometimes it is possible and preferable (though rarely since they become worn) to set em and en rules for the cross rules as is normally done with Monotype-set matter.

Sometimes, as in the case of tables which are frequently revised, the heading is set as a separate unit and a continuous horizontal rule used; thus the body of the table is easily changed, while keeping the original heading.

When a heading is set to run upwards, care should, of course, be taken to see that the number of these lines and the accompanying spacing totals the *exact* number of points of the column width. Failure to check small details like this will give endless trouble when imposing or on the machine and result in bowed or bent rules and defective joins.

It is generally necessary (though by no means always essential) in boxed tables (i.e. tables surrounded by a rule) to arrange for the down outside rules to be *within* the width of the top and bottom rules, so as to obtain a good butted join. Sometimes, however, the reverse is more convenient, or it may be preferable and desirable to have the outside rules mitred at the corners. These differences will obviously affect the calculation of overall dimensions, and attention is called to them for this reason.

Two-colour table-work is sometimes met with. If hand-set, no peculiar difficulty should arise, as the matter may, firstly, be set and made-up as a one-colour table; separation being made for colour in the normal manner. If machine-set, however, it is advisable that the operator sets both the "black" and the "colour" pages of each table, making the appropriate allowances in each "colour", to enable the compositor accurately to complete the make-up.

For choice of type founts and other related matters affecting style in tablework, *see Typographic Design.*

CHAPTER 7

IMPOSITION

IN a number of the larger printing offices the imposition of pages is done by specialist compositors called "stone hands". This system has its merits from the point of view of the management as there is possibly a saving of time in the composing room as well as on the machine. But from the point of view of the normal compositor the system is to be deprecated. It should be the aim of the craftsman-compositor to be able to prepare any job for the machine room. In the work of imposition there is need for care and attention to detail as well as accuracy of workmanship and the apprentice-student, if he finds himself in an office in which specialization has segregated this work, should make it his business to master the theory and practice of this most interesting and exacting section of his craft. It is still, fortunately, the practice in many firms to allow each compositor to complete his job ready for machine and, for this reason, a knowledge of the principles of the imposition of pages is essential to every apprentice and journeyman.

IMPOSITION OF PAGES OR JOBS. The student is referred to *Bookwork* (No. 3 in this series) for detailed reference to schemes of imposition in book or magazine work. The present chapter deals mainly with general rules or the more elementary knowledge necessary for the furnishing of formes and locking-up of the imposed job. Reference is also made here to the imposition of special kinds of formes.

The greatest difficulty of the young apprentice (and of many journeymen) is usually in the furnishing of the forme, i.e. the fitting of the wood or other furniture around the page or pages so that it performs its purpose correctly and without binding at any point. There are two distinct systems

which may be adopted when imposing, as shown at (*a*) or (*b*) in Fig. 3.

In the first illustration (*a*), point-cut furniture has been used, and it is thus possible for the furniture at the head and foot of the page to be the same dimension as the page width. The side furniture, to any convenient length, is then

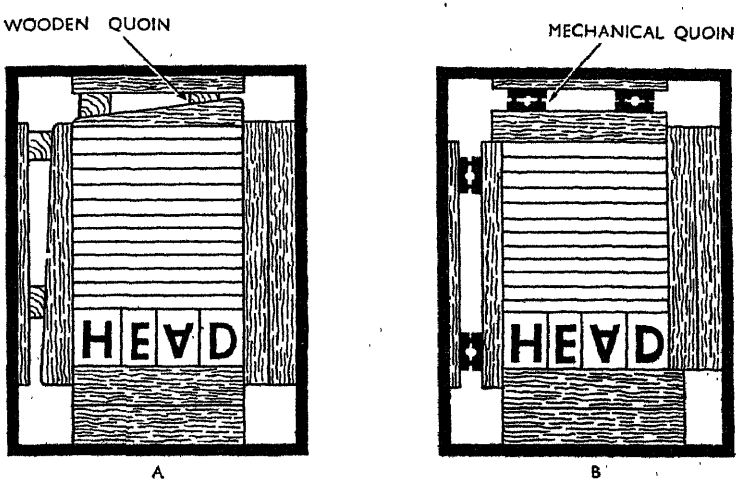


FIG. 3. IMPOSITION OF SINGLE PAGE.

(*a*) with point-cut furniture suitable to measure of job;

(*b*) overlapped, as when using furniture of odd sizes, or when not available to job measure.

allowed to overlap, as shown, thus ensuring that each corner of the page is protected and secured. It is very important that the side-stick, when using wooden quoins as in illustration (*a*), is *not* allowed to pass the foot-stick; this is to avoid battering the side-stick and to allow for unlocking the quoins at the foot.

In the second illustration (*b*), furniture of any dimension is used. By this means it is possible to secure the page by overlapping the furniture at each corner and, providing this

is carefully done, without allowing any length of furniture to bind at the end by touching the chase, the lock-up will be secure and square. It will be noted that, in this illustration, use has been made of mechanical quoins; in small formes, however, great care should be exercised when using them to avoid breaking the chase as they exert tremendous pressure. With mechanical quoins, side-sticks (unless a part of the quoin) are *not* used.

It is essential, when metal furniture and clumps are used in furnishing formes (as is often practised in book imposition) *never* to place them against the rim of the chase because of a tendency to slip. Wooden furniture allows the lock-up to be secure and should always be used against the chase even if only a reglet in narrow margins.

The principles illustrated and described above remain constant for imposing and furnishing formes whatever the number of pages. If due regard were paid to the necessities of securing a single page, there would be less difficulty when imposing large schemes of sixteen, thirty-two, or more pages. Failure to observe these simple principles results in many of the imperfectly secured formes found in the normal office.

The illustration, Fig. 4, shows the furnishing of a sixteen-page scheme when imposed with point-cut furniture and using mechanical quoins.

The use of the individual pieces of furniture at the foot of each page should be particularly noticed. Generally (but erroneously) a longer piece of furniture is used across two pages (at both heads and feet) with consequent trouble through binding of the back and side furniture and distortion of the foot furniture if there is any discrepancy in make-up of pages or of lock-up.

When several pages are to be imposed to print on the same sheet, it is necessary to use chases with cross-bars. In steel chases these are generally movable and, in certain impositions (12mo, etc.), it is necessary to move the short cross-bar to its higher position (*see* ***Bookwork***). Cross-bars

allow pages to be made secure by locking-up each quarte of the forme separately. It is usual (although not alway necessary or desirable) to arrange the lock-up so that it i at the two outer edges of each quarter. The pages are the secured by pressure toward each cross-bar (i.e. towar

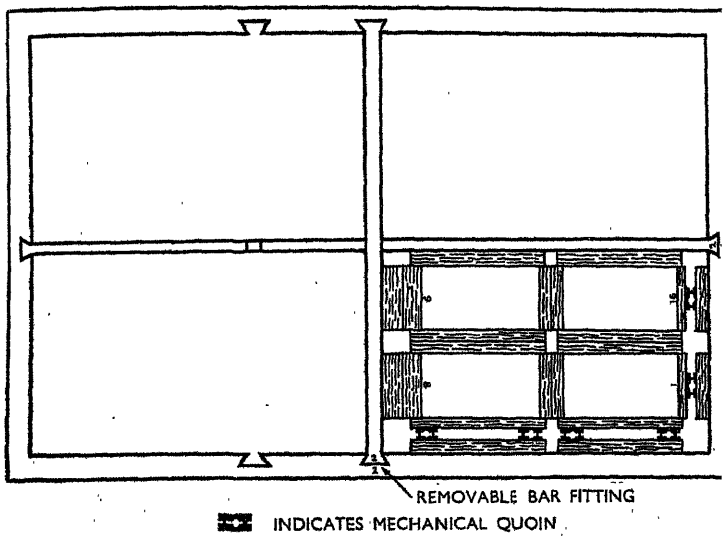


FIG. 4. FURNISHING THE FORME.
Correct method of imposing book pages with point-cut furniture. (Wooden furniture shown shaded; sometimes metal furniture is used *but it should never be placed against the chase.*)

the centre) and, in this way, both accuracy of position an squareness of lock-up are attainable. In very large scheme of imposition, special pairs of chases are used (foldin chases) and, usually, these each have one short cross-bar The two long sides of the chases, however, which adjoi when used together on the machine bed, have narrowe rims than the other sides. Another precaution (taken whe imposing very large formes) is to do the work on a specia

imposing surface. This has a tilting top with a lip-edge and a trolley undercarriage, thus permitting the top to be swung from a horizontal to a vertical position with the forme in position, enabling its transfer to the printing machine department. (When returned to the horizontal position and adjusted to bed-height, the forme may be slid from the imposing surface direct onto the bed of the machine.)

IMPOSITION OF COLOUR FORMES. The imposition of colour formes, particularly those containing close-register three- or four-colour half-tone blocks, calls for special treatment if the machine-minder is not to have his work hindered and every facility for obtaining "register" afforded him. Special register quoins, such as "Precision" or "Cox" patent quoins, are a considerable aid to the adjustment of colour formes. The quoins are inserted at each corner of a colour block (eight to each block), unless of small size, and they provide the machine-minder with a rapid means of obtaining minute adjustments in positioning the plates to obtain register. The illustration, Fig. 5, shows one-quarter of a typical forme, so imposed.

If sufficient register quoins are unobtainable, the compositor should nevertheless help the machine-minder to the fullest possible extent. To this end, it is necessary to insert at each corner of each colour block, several short pieces of thick and thin leads (if 1 point leads are available, include these also); the leads, according to size of the block, should be approximately 4, 5 or 6 picas long, but not longer. It will then be possible for the machine-minder to adjust the amount of lead-spacing at any corner to move a block in the direction necessary to obtain register. In the absence of register quoins, this method is better than the use of normal furniture adjacent to every block, though it will not, of course, provide the accuracy or convenience of the proper devices. When a colour forme, imposed with short-length leads at corners of blocks, is returned after printing,

it will generally be found that the machine-minder has used strips of paper or card, together with the leads, to obtain the necessary register. In these days of precision machinery it seems false economy not to provide register quoins for

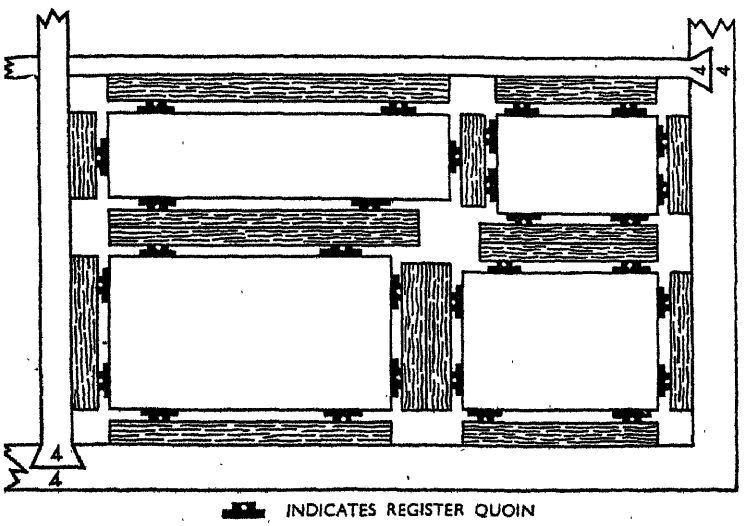


FIG. 5. IMPOSITION OF COLOUR BLOCKS FOR EASE OF REGISTRATION.

Where precision or register quoins are not available short leads are used.

imposing all colour blocks which have to be worked on their mounts (for assembly with type).

Sets of colour plates not on normal mounts but on various forms of bases (Parker board, Plate-mounting quadrats, Patent plate-mounting base) may be printed provided they are not printed with type. In this event the affixing and positioning of the plates upon the special mounting base is usually left to the machine-minder. The compositor is, however, in certain offices expected to perform this work.

IMPOSITION OF FOUNDRY FORMES. When matter is to be duplicated by either the stereo- or electro-typing process it is necessary to impose the type or blocks so that the forme is square or true and so that all rules or borders accurately join. In addition, it is necessary to surround the page or pages with special type-high bearers (or foundry furniture) and this must be carefully and correctly performed if it is to be satisfactory in the foundry. The foundry furniture has a bevelled edge on one side of its face, and this must be placed inwards and directly adjacent to the

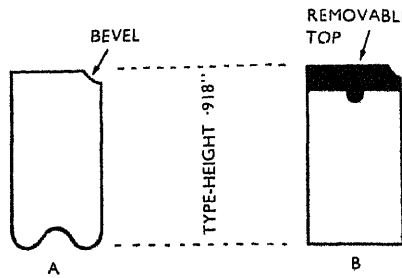


FIG. 6. FOUNDRY FURNITURE SHOWING BEVEL.
(*a*) normal section; (*b*) special section with removable top, for clean-proofing.

job or pages it surrounds. It is essential, too, that each corner is properly covered or overlapped by the foundry furniture to ensure a true mould.

The foundry furniture is usually in section as shown in Fig. 6 (*a*); a special kind of furniture has been used in recent years which has a removable top as shown in section in Fig. 6 (*b*). The advantage of the latter furniture is that it enables clean-proofing after the job has been finally imposed for foundry, thereby ensuring that the final proofs which are sent to the customer or advertising agency are identical to the plates to be made. ("Final" proofs have often differed from the printed copies taken from electro- or stereo-plates—the variation being due to carelessness in imposing for foundry.)

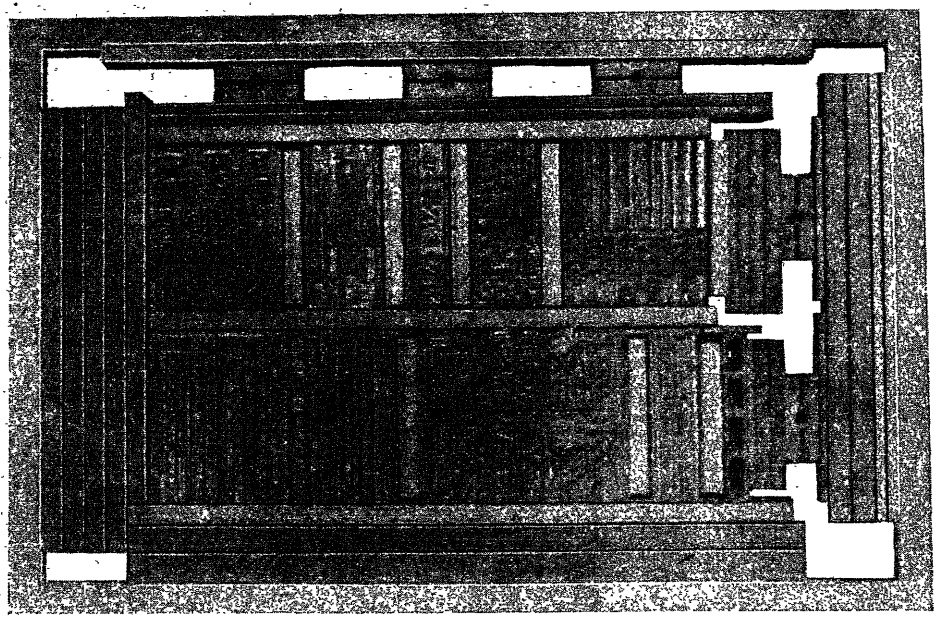


FIG. 7. IMPOSITION FOR FOUNDRY.

A composite forme. Note inserted type-high furniture between separate settings. It is not always possible to fit furniture accurately to job measures. The illustration shows the use of oddments of furniture used to the best advantage.

The use of poor quality untrue foundry furniture often causes much trouble in the composing department. Very often the furniture is "home-made", having been cast cheaply and inaccurately in the printing office. Such economy is false, and it is in every way preferable to purchase good quality accurate furniture from a reputable supplier, if trouble in imposing for foundry is to be avoided.

Fig. 7 shows a composite forme imposed for foundry. Whenever several originals are duplicated together it is wise to insert pieces of type-high furniture to act as bearers between each item, as here shown.

IMPOSITION FOR MACHINE. The imposition of jobs to be printed on platen machines needs the use of special machine chases which are peculiar to the respective machines used. These chases have, usually, either a notched portion on one or both of the long sides, or a projecting lug on one long side, or the long sides of the chase may be chamfered. The purpose is to allow the chase to be secured vertically against the bed of the machine by means of a clamping device. The chase is landscape way when locked in position on the machine.

It follows that with certain machines the chase may be used with either of the long sides at the top but with most it is necessary for the long side bearing the lug or notch to be at the top when inserted in the machine. This, therefore, affects the compositor when imposing a job for working on a platen. Should the job be small, it is more usual to impose it in an ordinary chase of suitable size before imposing the forme in a machine chase. With larger jobs, however, the page or pages are imposed direct in the machine chase. Sometimes small jobs are imposed direct into a special "skeleton" machine chase.

It is very important for the lock-up to be on the correct sides in order to preserve "square" and unvarying lay-edges. Fig. 8 makes this clear.

The compositor should notice particularly that *the forme appears in the above position when on the platen machine* (i.e. as the operator faces the machine). To ensure accuracy it is necessary, in all normal work, for the left-hand side and the bottom side (as seen in this position) to have solid furniture, and the top and right-hand sides to accommodate the lock-up (side-stick and/or quoins). It is, accordingly,

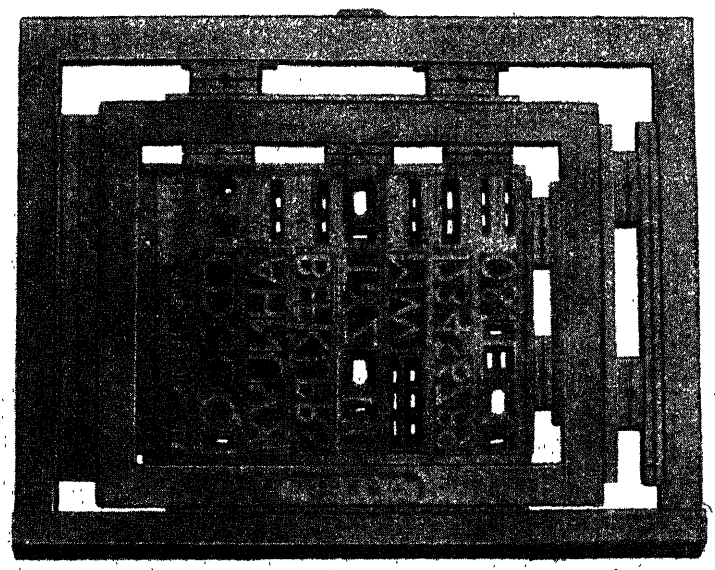


FIG. 8. IMPOSITION FOR MACHINE.
Forme fitted within machine chase. Note position of solid furniture and lock-up to maintain square lay-edges when printing.

wise always to impose all upright jobs for platen with the lock-up at the left and foot of the job as it rests upon the "stone" or imposing surface, i.e. with the head (and solid furniture) towards the compositor. This would then be suitable for machine chase if not imposed direct. (*Note:* an oblong job would have the lock-up at the foot and right-hand side.) This will also help to ensure accuracy and square-

ness in position of the printing on the paper. (*Note:* when a sheet is being "backed-up" by printing on the reverse side, it is the practice in good work to keep the same lay edges of the sheet and to feed the sheets with the left hand to a right-hand side-lay. This would, of course, affect the imposition of the backing forme, accordingly. With automatic feeders this cannot be done and there is, therefore, no occasion to alter the forme.)

Normally, the long side of a sheet is fed to the "front-lay" and the adjacent (left-hand) short side is fed to the "side-lay". In the case of a letter-heading, however, it is preferable to impose the type matter slightly lower than the centre of the chase so that the "head" of the sheet (short side) may be fed to the "front-lay". This helps to ensure that the heading, when printed, is parallel to the top edge of the sheet.

Generally, it is advisable to centre the job, as far as possible, within the machine chase, although sometimes, because of the position of the printing on the paper, this is not possible.

If the forme is a small one and the size of the paper permits sufficient clearance, it is wise always to include type-high bearers between the furniture at the short sides of the chase to aid the inking of the forme.

In the case of the "Vertical Michle" the special machine chase is marked (on the sides at the front-lay edge) with guide lines (*a*) to show the limit beyond which no part of the forme should extend (termed the type-line) and (*b*) to show the paper edge position when printing (termed the paper-line). In order to impose a job in the correct position, at the right distance from the front-lay edge, the compositor will ascertain the correct furniture to use by measuring from the paper-line on the chase. The forme obviously cannot extend beyond the type-line because of the cylinder grippers whose positions are also shown along the lower-edge of the chase. The compositor should note these positions of the grippers since they are also the front lay-

guides and they are not adjustable. This is necessary in order to avoid a gripper coming at the corners of the sheet; this would be likely to affect the "register". The compositor should position his job so that, when in correct position on the sheet, the sheet is also in correct position in relation to the grippers. This will prevent waste of time in the machine department by avoiding the necessity for re-imposition or adjustment of the forme.

With certain platen machines of the better kind, there are usually indications at the sides of the chase which enable the positioning of the front-lays to be readily ascertained; and the margin therefore determined; these, too, are a guide to the compositor when imposing a job in the machine chase, since automatic feeders may require fixed positions for the lays.

When imposing larger jobs for printing upon normal (horizontal) cylinder machines, chases with cross-bars are generally used, consequently the lock-up exerts pressure towards the centre of the forme and occurs (unless imposed otherwise for a particular reason) at all outside edges. With a poster or large broadside, or a forme not requiring the use of cross-bars where the lock-up will be on two adjacent sides only, the compositor should consider which long side will become the front-lay and which short side the side-lay. These will vary according to the machine on which the job is to be printed, i.e. on two-revolution cylinder presses (where the sheet is fed at the top of the cylinder) the lay-edge, when the forme is on the bed, is the farthest from the ink-duct; whereas in stop-cylinder machines (fed at base of cylinder) it is nearest to the ink-duct. Similarly, the side-lay in such cases will normally be the near-side (or feeder-side), especially when hand-fed. The compositor must consider these conditions and arrange the forme accordingly if his work is to expedite production and meet the requirements of the machine department.

In all cases when imposing for machine, the compositor should take special care to ensure that: (*a*) the matter is

correctly positioned within the chase; (*b*) the solid furniture is at both lay-edges (except in the case of bookwork formes having the lock-up on the four outer edges); (*c*) the furnishing of the forme is competently done and that no furniture is binding, or corners of pages left unprotected; (*d*) no worn or battered wood or metal furniture is used, thus avoiding out-of-truth registration on machine; (*e*) all blocks are square and firm on their mounts; and (*f*) the forme is lightly planed prior to careful locking-up, which should avoid undue pressure and any tendency to "spring".

MAKING MARGINS IN BOOK AND MAGAZINE WORK. The student is referred to *Bookwork* for the considerations which determine the making of margins when imposing book or magazine work. He will also find a complete reference to the principles of imposition and various alternative imposition schemes.

CHAPTER 8

THE FINER POINTS OF COMPOSING TECHNIQUE

THE subject matter of this chapter cannot conveniently be included in any of the foregoing chapters, and certain other items affecting typographical design will be more fully considered in *Typographic Design*.

The intelligent compositor will work systematically and with a view to obtaining a satisfactory appearance in every job he is called upon to undertake. The method of setting or make-up should be orderly and efficient, and thought, *before beginning work*, is both advisable and desirable if the best results are to be obtained. Often, time may be saved by intelligent planning and building-up of the setting, and this becomes more important when the compositor is assisted by other craftsmen. Careless planning of production may mean that other assistants are kept waiting.

Battered materials, such as furniture, quadrats, leads, clumps, reglet, etc., should always be avoided because they are time-wasting and the cause of most troubles on the imposing surface or machine.

The choice of type design for use as headings or subheadings, in relation to the type chosen for the setting of the text, is an important consideration, and is usually the responsibility of the compositor when no complete layout is provided.

LETTER-SPACING. Letter-spacing (the insertion of hair or thin spaces between the letters of words) needs discretion, and it is important to remember that its main purpose is *not* to make a display line fill a given measure. Letter-spacing should be used when (*a*) it is required for typographic effect to reduce the textural weight of the line (as in

a main heading, or more particularly in a sub-heading or page head-line set in even capitals or even small capitals); or (*b*) to obtain optical spacing in display lines. (Often one sees the obvious need for judicious spacing between certain combinations of characters in large display lines.) It should be remembered that, when letterspacing is used, the word spaces should be increased proportionately to aid the legibility of the line. The letterspacing of lower-case letters should be avoided because it changes the pattern presented to the eye and hinders smooth reading.

If hair spaces are unobtainable the compositor must cut his own from pieces of thin and thick leads. It is important, when doing this, to see that the cutter does not make a burr (otherwise the line will tend to "spring" or pie); it is also advisable to *make certain* that the size of the space cut is a trifle less than the body size of the type—the cutter should not be relied on to cut *exactly* 24 point pieces of lead when set to this gauge, but should be *tested* to see that it does not cut over-size pieces. In well-equipped offices brass (1 point) and copper ($\frac{1}{2}$ point) spaces are available in all sizes. Their use is a great convenience and enables exceedingly accurate optical spacing to be obtained. They are, however, easily damaged and should be used with care.

(*Note.* When breaking-up formes containing Monotype matter for remelting, care should be taken to retrieve any hair spaces used, particularly if of brass or copper, as their presence in the metal would be detrimental to the alloy; they are also expensive to replace.)

"WHITING-OUT." The grouping and spacing of related items in a setting is known as "whiting-out". In many respects this operation is one in which the compositor shows his skill and taste to the greatest advantage. An intelligent interpretation of the copy is essential, and the compositor is advised always to take sufficient trouble to test the effect of changes of grouping or spacing by taking proofs of each change he makes. Only in this way will the young com-

positor learn to appreciate the differences that may be obtained by even slight changes in spacing.

In table and tabular work, too, the choice of fount equipment, the legibility of figures, and "whiting-out" play an important part in satisfactory and pleasing appearance.

FOUNT EQUIPMENT WHEN SETTING JOBS. The compositor is not always responsible for the choice of type faces in a job, particularly where designs or layouts are submitted by publishers, advertising agencies or the firm's staff typographer. This should not, however, deter the student from studying possibilities in the choice of type founts, or when to use capitals, small capitals, italics or related bold faces. He will gain much valuable information by studying all forms of printed matter and, if attending classes at a school, he will be well advised to discuss these matters with his tutor. Contemporary typographic arrangements, particularly from noteworthy presses, show how aptly the resources of related founts may be exploited.

PROOFING. The compositor is usually expected to proof his own settings (if small jobs) for submission to the customer.

It is important to remember that proofs submitted to the customer create an impression—"shoddy" proofs in themselves lessen the chance of making a good impression on the customer. Carefully taken proofs, on the other hand, adequately inked, *without undue impression*, correctly positioned, *and on the right side of the paper*, help considerably to present the job under the most favourable conditions. It is unintelligent to scamp the results of many hours' work.

Cylinder press proofs are also taken by the pressman who is often employed especially for this work. Generally his services are made use of when (*a*) a large number of proofs is required (the compositor is normally allowed to proof only a limited number); (*b*) the number of galleys to be proofed is considerable (as in bookwork); or (*c*) the job needs special proofing on a particular paper and in special colours.

CHAPTER 9

CLEARING AND DISTRIBUTION

After the formes are printed they are generally returned to the "Store". This room or section of the composing department is a most important one and the smooth working of the composing room depends upon its efficiency. It is usually organized by a compositor (called the "Storekeeper") who does no other work, and who, in large offices, is assisted by one or more journeymen.

In the store are kept all formes of jobs which have been proofed but not printed. In addition, many formes of jobs likely to recur are also kept. All formes worked off and not required to be kept standing are returned to the store, where they are laid-up and the assembled matter sorted, blocks stored, furniture and other spacing material cleared (replaced in appropriate racks); type is stored or distributed (returned to case) unless mechanically composed, when it will be broken up for remelting. The distribution and clearing, particularly in large offices, is generally the work of special compositors (termed "clearing hands"), but all compositors are expected to do some clearing, from time to time. The storekeeper is also responsible for the replenishing of cases and arranging for the clearing and distribution.

Unfortunately, and short-sightedly, many employers (or their overseers) appear to believe that the young student-apprentice will be happily engaged for week after week on clearing. This is by no means true; rather does the apprentice begin to wish he had never seen a composing room—and this is understandable. It is to give encouragement to such young apprentices that the following paragraphs appear.

First, there are many advantages to be gained from the work of clearing and distribution. The newcomer in any department requires to know where materials are kept, how stored, and what variety of equipment is available. Clearing

ensures that this knowledge will be gained in a short space of time, and is therefore justified on those grounds. Secondly, the student will gain confidence and experience in handling various materials—he will have to ask questions of journeymen in order to clear all materials. He is thus absorbing a great deal of knowledge which he will make use of later in his career. Lastly, if he is wise, he will use the opportunity that clearing affords to show his efficiency to his overseer, clicker, or journeyman. If he can be expeditious and go about the sorting and replacement of materials in a competent manner, he will soon prove his value as a potential compositor and will not long remain on such work.

CLEARING. Correct procedure when clearing is important because it undoubtedly saves time. When a forme is to be dropped, i.e. unlocked and the matter cleared and distributed, it is advisable to work systematically.

After cleaning the forme by means of paraffin sprinkled on a pick brush, the forme is unlocked; the chase and all quoins and wooden furniture are then removed. The wooden furniture is sorted into lengths by ranging it on a galley, where it will be easy to gather all pieces of the same length together for return to the appropriate compartments of the furniture rack. Metal furniture is similarly treated. Any pages required to be kept standing are next tied with page-cord and slid on to galleys for transfer to storage racks. All blocks are removed and placed on the randoms or on galleys for return, later, to the store.

Type matter is divided into its respective categories; the mechanically composed matter first has all leads and rules removed (unless of the same casting and not required to be used again). The text matter is then broken up and removed from the store into bins, to await remelting. Different kinds of mechanically set matter should always be kept in different bins, otherwise the metals would become unsuitable when remelted. (*Note:* water or moisture should never be allowed to enter the bins of metal because of the danger of ex-

plosion, due to combustion, when remelting the metal.) The type-founders' types are transferred to galleys and removed to a cabinet-random for attention later. Rules, borders and leads are then separated and placed on galleys, to await sorting and sizing.

It is advisable to proceed in this manner until the imposing surface is clear, since the space on the "stone" may well be required by other compositors. After wiping the imposing surface, the work of sorting the various galleys of leads, rules, type, etc., may be proceeded with at the cabinet or frame.

To facilitate the sorting of leads, or rules and borders, into lengths it is advisable to range them on the galley and to go through each kind in turn, by taking the longest and quickly transferring it to the right-hand end of the galley. In this way, the various lengths will become progressively ranged in sizes until the shortest are at the left-hand of the galley. It is then a simple matter to return each group of the same size to its compartment in the appropriate racks. If the various thicknesses of leads are kept separately in the rack, as is the case with rules, it is only necessary to sort each size again into the related thickness groups before returning them to the racks.

Type matter is best left until last and, here again, the best plan is to sort the lines systematically into groups of the same type fount. When this has been done, it is easily possible to bring together on the galley all lines of identical size within the same fount group; distribution may then be effected without waste of time and without using any case more than once.

The blocks should be carefully brushed with a pick brush (a small stiff brush, used with paraffin for cleaning type) and then carefully *dabbed* with clean rag. A half-tone block should not be wiped with rag as there is a tendency for the spaces between the dots to become filled with fluff.

Rules should be very carefully cleaned to remove dried ink, both on the face and at the sides, and also to make them available for use, if necessary in combination, later.

DISTRIBUTION. When beginning to distribute type, the compositor must first place the appropriate and correct case in position on the cabinet or frame. He will have cleaned the type with paraffin before unlocking the forme. Each page is now cleansed with a lye brush dipped into lye (if not available, soap and water is used), after which it is thoroughly rinsed with water.

Distribution (called "dissing") is the process of returning type (or "dis.") to the case. The fount should be carefully checked by its nick and face with the type in the case before proceeding and the compositor should make himself familiar with the lay of the case if it in any way differs from normal.

The type is distributed while still wet from washing and cleaning. If it has been allowed to dry it should again be wetted with a sponge or rag.

Various methods of holding lines while "dissing" are practised and single lines are more often held, supported on a lead or rule, nick upwards (as when setting), between the forefinger and thumb of the left hand. The beginner would be well advised to hold only one line at a time, but as he becomes more expert he will hold more lines, until he experiences no inconvenience with a stickful. The best way of holding a number of lines is as follows: the lines are lifted from the galley and supported by a rule, clump, or setting-rule. The right hand momentarily supports the lines while the left hand is adjusted so that the second, third and fourth fingers are lightly grouped (one above the other) to form a support under the lines resting upon the rule or clump. The thumb supports the lines at the left end and the forefinger supports them at the back. The face of the type is towards the compositor and the right-hand end is tilted slightly higher than the other to prevent letters from falling off.

The compositor takes short words or groups of letters from the end of the top line; these are pushed forward on to the thumb of the right hand by the middle finger and then grasped by the thumb and forefinger. The letters are

separated by twisting them sideways and back again. The characters are returned to their appropriate boxes in the type cases by *dropping* them, one by one; the thumb of the right hand should be downwards and towards the compositor and the hand should move quickly over each box so that the character may be released and returned to its correct box. It is most important not to *throw* types into the case from a height because inaccuracy and battering occurs.

Each line is proceeded with and completed before beginning another. Care should be taken to distinguish between such letters as n, u, b, d, p, q, in lower-case, and also certain small capitals which could be confused with lower-case, as c, o, s, u, v, w, x, z. Spaces require careful attention and it is important to be able to recognize the thickness immediately if they are to be distributed quickly and accurately.

Type dropped on the floor should be picked up *immediately*; similarly, any characters dropped into the wrong box should be retrieved at once.

Given careful attention to the foregoing details, the student will find he will become speedy and efficient in accomplishing the distribution of even very small sizes of type. An expert compositor is usually able to distribute matter at a rate of about four times faster than he would take to set the same amount.

CHAPTER 10

CASE-ROOM CALCULATIONS (1)

EVERY compositor or typographer is called upon to make calculations relating to type-setting. They may be of the simplest kind, as that of "casting-off" the number of words to a given area in a certain type size, or, more complex, such as "casting-up" the cost of composition in any given job. Almost all compositors are able to calculate the more simple requirements of day-to-day work, but the keen student will realize the great advantage of understanding the principles of "casting-off" and/or "casting-up" for any kind of setting. The overseer or typographer usually requires to be expert in these matters and certainly no layout-man could become a competent typographer without a full knowledge of them.

The ensuing chapters explain the principles and give progressive examples of each form of calculation likely to be of practical use in the composing or layout departments. The abbreviations MS. and TS. refer to manuscript and typescript copy, respectively.

"Casting-off" and "Casting-up." A clear distinction should be made between the terms "casting-off" and "casting-up". The former is used when calculating the space to be occupied by the copy, or the type size to be used on a particular occasion, or when finding the number of words contained in a given area of type matter. The term "casting-up" is used only in reference to the costing or charging of the matter set (or to be set). This usually applies to either "piece-work" rates (when the setting is charged at a rate per thousand ens) or to "time" or hourly rates, based on average outputs for hand- or machine-composition.

Systems of Computation. (*a*) Because of the accuracy of the Point System, the most generally used system for type

calculations is that based on the EN QUAD, which is taken to be the average lower-case letter-width. This is by no means accurate for *every* type face, however, and it is more often found that the normal type fount has an average letter-width of *less* than an en quad. Only certain wide or bold founts exceed the en quad average. The examples in the following pages are based on this method.

(*b*) Another system, for which a high degree of accuracy is claimed, is that based on the average letter-width (or the lower-case "c" width) of the fount to be used. This method, however, needs specimen type settings showing the relative widths of a given number of the letter "c" when set in a line. From these one-line specimens it is possible to assess the number of letters or words (by allowing six letters to each word and its space) to any given measure, in each type fount in use in an office.

(*c*) A further and reliable method is the practical one of setting a small quantity of the MS, in the type to be used. This is continued until a number of full lines of the setting makes *exactly* a number of full lines of the MS. or TS. The answer, or the amount of space a given piece of copy will occupy, is then found by a simple sum in proportion. This is only accurate when the copy has been carefully typed or written, i.e. when the average number of words to a line is fairly consistent.

(*d*) Many special systems, by various authors, have from time to time been propounded. For various founts of type some claim to arrive at an "index" figure which must be known in order to use it in calculating either the space to be occupied by a MS. or the type size in which to set a MS. In other (less accurate) systems use is made of tables, giving such data as the number of words to a square-inch in any given type-fount.

All these systems are useless, however, unless the special tables are to hand and, although in some cases they are extremely accurate in use, the student is advised to master calculations on the en quad basis first. This will ensure

that he understands the principles and also that calculations may be made, at any time, without dependence upon charts or tables.

Counting the Words to the Copy. Whatever method of calculation of type matter is adopted, the greatest difficulty lies in computing accurately the total words in a given TS. or MS. If the copy is carefully prepared, typed (or written) to a uniform length of line, with the same number of lines to each folio (a sheet typed or written on *one* side only), it is a relatively simple matter to find the average words to a line, and therefore words per folio; but with a badly-written MS., in which many corrections or changes and transpositions occur, calculating by average is almost impossible. On such occasions, *the only satisfactory method* is to make an actual word-count of each folio to obtain a useful assessment on which to base further calculations. It may be thought that this is, in itself, an endless task—indeed, it may well take several hours; but on difficult copy it is time well spent, and is well repaid by the resulting accuracy of any calculations on which the word-count is based.

Naturally, when assessing the total words in the copy, the typographer should note any peculiarities in the text, such as conversational matter (involving many short lines), where tabular matter is inserted, if verse occurs, and any other special differences from the normal text. In most of these instances it is usually possible to judge the number of *lines* the matter will make; these should be separately noted and included in the final computation.

The Value of the Point System. Almost all forms of type calculations owe their relative accuracy directly or indirectly to the Point System to which standard almost all present-day type is cast. It provides a simple means of bringing the factors involved to a common unit; this unit is the *Point* which measures 0·013837 inch, and 72 points measure approximately 1 inch (actually 0·9962 inch). The standard adopted for the measurement of type page areas is the *Pica* which

measures 12 points (or 0·166044 inch). It will be seen, therefore, that the typographer or compositor is provided with a system which may be used in obtaining relatively accurate computations in regard to type settings. In the *En Quad System*, which follows and upon which the subsequent examples are based, its versatility and value will be apparent.

THE EN QUAD SYSTEM. As has been stated, the en quad system of "casting-off" has certain disadvantages; the chief is that the average letter width of normal founts is less than the en quad. It is, however, possible to use this system as a basis for all kinds of type calculations and an intelligent typographer will make certain adjustments to obtain a truer computation in any given instance. The student is referred to these variations (*see* pp. 159–60) which follow the several examples of calculations likely to be met with in the composing or layout departments. He should not worry about the differences at first but attempt to master the elementary principles and to understand their application, as shown in the various examples. Once the groundwork has been mastered he will be able to see where and how the system can be applied to more complicated problems.

When calculating type areas or finding the space to be occupied by the copy, the average word (in English) is taken to be approximately five letters; the typographer assumes *each word to be equivalent to six ens* (or three ems) of whatever type size is used. The reason for this is that an additional average letter-width (an en) is added for the space after each word: thus each word represents six ens (five letters, plus one space).

If foreign matter is to be set, or technical or scientific matter, the average word-length may be different and should be ascertained by a trial counting of a paragraph.

Ens to a line. Bearing the foregoing factors in mind,

generally the first thing to find out is, therefore, the number of letters (ens) to a line in the type size to be used.

EXAMPLE (1)

(*a*) Find the number of POINTS to a line 22 picas wide.

22×12 (points to pica) $=$ *264 points to line width.*

(*b*) Find the number of POINTS to a line 5 inches wide.

5×6 (picas to inch) $= 30$ picas.

$\therefore \quad 30 \times 12$ (points to pica) $=$ *360 points to line width.*

In the above examples the student should notice the difference when the page (or line) width is given in picas or in inches. No difficulty should arise if this is carefully noted in every calculation. (Printers always use picas; advertising agencies too frequently use inches for type page dimensions.)

EXAMPLE (2)

(*a*) How many ENS of 12 point are there to a line 24 picas wide?

$24 \times 12 =$ points to line

and $\quad \dfrac{24 \times 12}{12} =$ EMS of 12 point to line.

$\therefore \quad \dfrac{24 \times 12}{12} \times 2 =$ *48 ens of 12 point to line.*

(*b*) How many ENS of 8 point are there to a line 24 picas wide?

$24 \times 12 = 288$ points $\therefore \dfrac{288}{8} \times 2 = 72$ *ens of 8 point to line.*

or $\quad \dfrac{24 \times 12}{8} \times 2 = \dfrac{288 \times 2}{8} = 72$ *ens of 8 point to line.*

The student will begin to see the ease with which the calculations may be made by using fractional working. The second alternative, in (*b*) above, could be at once simplified further, so:

$$\frac{24 \times 12}{8} \times 2 = 72 \text{ ens of 8 point to line.}$$

When calculating the number of *ens* to a line, it often happens that a fraction of an en quadrat is involved, and the rule to adopt is that *fractional parts of* $\frac{1}{2}$ *or more count as an en*, as in the following instance:

EXAMPLE (3)

How many ENS of 10 point are there to a line 28 picas wide?

$$\frac{28\times12}{10}\times2=\frac{672}{10}=67.2 \text{ ens, or } \textit{67 ens of 10 point to line.}$$

(In this connection, it would be well to explain that the Trade practice, for charging matter set "piece-work", is to charge to the nearest *thick* space (i.e. $\frac{2}{3}$ of an en quad); but for practical purposes in calculations this is an unnecessary refinement.)

Lines to the page-depth. Given the method by which the average number of letters (ens) to a line is obtained, it is easy to find the number of lines to the page-depth. The student should note, however, the difference between the following examples, where type is (*a*) set solid (i.e. without leads between the lines), and (*b*) where the matter is leaded.

EXAMPLE (4)

(*a*) Find the number of LINES of 11 point to a page 46 picas deep.

$$\frac{46\times12 \text{ (points to pica)}}{11 \text{ (points to depth of line)}}=\frac{552}{11}=50\tfrac{2}{11}=\textit{50 lines to depth.}$$

(*b*) How many LINES of 11 point, 2 point leaded, to a page 39 picas deep?

$$\frac{39\times12}{(11+2)}=\frac{39\times12}{13 \text{ (depth of line, leaded)}}=\frac{\overset{3}{\cancel{39}}\times12}{\underset{1}{\cancel{13}}}=\textit{36 lines to depth.}$$

It will be seen that the thickness of the leading used is *added* to the type size (in order to give the true body depth per line) when matter is leaded, or cast on a larger body, e.g. 10 point on 12 point. (*Note*: The number of ens, or letters, in a line cannot be affected if the matter is leaded.)

Two further examples should make the calculation of lines to a depth of a page or column easily understandable. If a fraction of a line results, the fraction of $\frac{1}{2}$ or more is included as a line.

EXAMPLE (5)

(*a*) How many LINES of 11 point are there in a column 13 inches deep?

$$\frac{13\times6\times12}{11}=\frac{936}{11}=85\tfrac{1}{11}=85 \textit{ lines to depth.}$$

(*b*) How many LINES of 9 point, $1\frac{1}{2}$ point leaded, are there on a galley containing 15 inches of type deep?

$15\times6\times12=$ Points deep on galley.

$$\therefore\quad \frac{15\times6\times12}{10\frac{1}{2}}=15\times6\times\cancel{12}\times\frac{2}{\cancel{21}}=\frac{720}{7}=102\tfrac{6}{7}=103 \textit{ lines on galley.}$$

Ens or Words to a Page. Having determined the ens to a line and the lines to the depth of a page, it is a simple matter to multiply them to calculate the total number of ens to a page. By dividing this figure by 6 (5 letters plus space, to each word) the number of words to a page is obtained.

EXAMPLE (6)

(*a*) Find the number of ENS to a page set in 9 point type to a page area of 21 picas wide by 33 picas deep.

$$\text{Width in ENS}=\frac{\cancel{21}\times\cancel{12}}{\cancel{6}\ \cancel{2}}\times2=56 \text{ ENS.}$$

$$\text{Depth in LINES}=\frac{\cancel{33}\times\cancel{12}}{\cancel{6}\ \cancel{2}}=44 \text{ LINES.}$$

$$\text{No. of ENS IN PAGE}=56\times44=2{,}464 \text{ ENS.}$$

(*b*) To find the number of WORDS instead of ens to the above.

This would involve continuing so:

$$\frac{56 \times 44}{6} = \frac{1232}{3} = 410\tfrac{2}{3} = 411 \text{ WORDS } \textit{to page.}$$

(*c*) How many words are there to a page set in 9 point type, $1\frac{1}{2}$ point leaded, to a page area of 21 picas wide by 35 picas deep?

$$\text{Width in ENS} = \frac{\overset{7}{\cancel{21}} \times \overset{4}{\cancel{12}}}{\underset{3}{\cancel{9}}} \times 2 = 56 \text{ ENS.}$$

$$\text{Depth in LINES (9 pt. } + 1\tfrac{1}{2} \text{ point lead)} = \frac{35 \times 12}{10\frac{1}{2}} = \overset{5}{\cancel{35}} \times \overset{4}{\cancel{12}} \times \frac{2}{\underset{3}{\cancel{21}}} = 40 \text{ LINES.}$$

$$\text{No. of ENS to page} = 56 \times 40$$

$$\text{No. of words to page} = \frac{\overset{28}{\cancel{56}} \times 40}{\underset{3}{\cancel{6}}} = \frac{1120}{3} = 373\tfrac{1}{3}$$

$$= 373 \text{ WORDS } \textit{to page.}$$

It should be noted that the number of ens to a line and the number of lines to the depth of a page *should each be ascertained separately*. The reason for this is that due allowance for the inclusion of the fractions of $\frac{1}{2}$ en or more in the width, or the $\frac{1}{2}$ line or more to the depth, could not otherwise be made.

CHAPTER 11

CASE-ROOM CALCULATIONS (2)

THE elementary principles of type calculations have been enunciated in the previous chapter and the student has also been introduced to the elementary forms of calculation embodying the en quad system. In the present chapter further examples are given as it is felt that, in this way, the various problems will be the more clearly resolved. Space alone precludes the inclusion of many forms of alternative examples, but all essential differences are shown.

Before continuing with the sequence of examples it is desirable to call attention to the several differing terms which so greatly affect the calculation in any given instance.

The importance is laid on whether page dimensions are given (*a*) entirely in picas (or 12 point units); (*b*) in picas for the measure, but in *lines* for the page-depth; (*c*) in inches for either dimension; (*d*) in square-inches as in the case of an overall computation of the space available for copy; or (*e*) in *ems of the type body in use*, as when setting or calculating for tabular or table matter. Each instance will, accordingly, require different variants to be made in the calculation. It is probably necessary to refer here to (*d*) only, since the other variants have been covered by, or may be readily ascertained from, the examples in the previous chapter.

When calculating on the square-inch basis it is important to remember that *type has area* and that the body size is *not* a linear dimension only. Since 72 points equal one inch, 72×72 points equal a square-inch; thus, for example, when using 8 point type, the *area* of the em quad is used:

$\frac{72 \times 72}{8 \times 8}$ represents the EMS of 8 point to 1 square inch.

$\therefore \frac{72 \times 72}{8 \times 8} \times 2 =$ ENS of 8 point to 1 square inch.

and similarly with any type body size, if finding ens (or eventually words) to a square-inch dimension.

Words to a Work, or Number of Pages a MS. will make. Having traced, in the previous chapter, the progressive stages of ascertaining the number of words to a page, one example will suffice to show a complete calculation determining the number of words to a given work. Similarly, the number of pages a MS. will make is readily found and is shown as a succeeding example.

EXAMPLE (7)

(*a*) A work makes 64 pages, set in 10 point type, 2 points leaded, to a page area of 20 picas by 30 lines deep. How many words does it contain?

$$\frac{\overset{2}{\cancel{20}\times 12}}{\underset{}{\cancel{10}}} \times 2 = 48 \text{ ENS in a line.}$$

since there are 30 lines to depth (ignore type size and leading!)

$$\therefore \quad \frac{48 \times 30}{6} = \text{WORDS to 1 page.}$$

$$\therefore \quad \frac{48 \times 30}{6} \times 64 = \textit{15,360 words to the work.}$$

(*b*) A MS. contains 63,000 words, and is to be set in 14 point type, 2 point leaded, to a page size of 36 picas wide by 50 picas deep. How many pages will it make?

Total ENS in MS. $= 63{,}000 \times 6.$

Ens in page:

$$\textit{Width:} \quad \frac{36 \times 12}{\underset{7}{\cancel{14}}} \times \cancel{2} = \frac{432}{7} = 61\tfrac{5}{7} = 62 \text{ ENS.}$$

$$\textit{Depth:} \quad \frac{\overset{25}{\cancel{50}} \times \overset{3}{\cancel{12}}}{\underset{2}{\cancel{16}}} = \frac{75}{2} = 37\tfrac{1}{2} = 38 \text{ LINES.}$$

No. of pages MS. will make:

$$\frac{63{,}000 \times 6}{62 \times 38} = \frac{94{,}500}{589} = 160\tfrac{\cancel{5}\cancel{6}\cancel{0}}{\cancel{5}\cancel{8}\cancel{9}} = \textit{161 pages.}$$

In the above calculation (*b*) it should be noted that the odd ½ line to the depth is counted as a line (since in practice, on the galley, the compositor would either have to include the extra line, or ignore it). Note also that a fraction of a page must count as a page as even if only a few lines occur on the last page they cannot be ignored.

Resetting a Given Work. When a work is to be reset, either (*a*) to a new page size, in the same size type; or (*b*) to the same page size, in a different size type, it is convenient to resort to the proportionate form of calculation, which is shorter than the en quad method.

EXAMPLE (8)

(*a*) A work makes 220 pages when set in 11 point, solid, to a page size of 22 by 34 picas deep. How many pages will this make if a new edition is to be set in the same size type but to a page area of 20 by 30 picas deep?

The formula would be:

$$\frac{\text{area of original page}}{\text{area of new page}} \times \text{No. pages in original setting.}$$

or

$$\frac{\cancel{22}^{11} \times 34}{\cancel{20}^{\cancel{10}^{5}} \times \cancel{30}^{3}} \times \cancel{220}^{11} = \frac{4{,}114}{15} = 274\tfrac{4}{15} = 275 \textit{ pages.}$$

(*b*) It is proposed to reset to the same page area a work originally making 294 pages size 21 × 32 picas deep, set in 10 point, solid; but the new type size is to be 12 point, solid. How many pages will the new setting make?

The formula would be:

$$\frac{\text{area of EM of type to be used}}{\text{area of EM of type originally used}} \times \text{No. pages in original setting.}$$

or

$$\frac{\cancel{12}^{6} \times \cancel{12}^{6}}{\cancel{10}^{5} \times \cancel{10}^{5}} \times 294 = \frac{10{,}584}{25} = 423\tfrac{9}{25} = 424 \textit{ pages.}$$

With this form of calculation the student should ask himself whether the new setting will make more or less pages. (This is usually obvious.) If *more*, the smaller area

should be divided into the larger; if *less* the larger area should be divided into the smaller. This applies to both kinds of proportionate calculation, (*a*) and (*b*) above. Note that in either case there is a *constant*. In (*a*) it is the type size; in (*b*) it is the page size.

Should the new setting involve a change of type size which is leaded, no difference in principle is involved. The EM quad area, as leaded, would be used; e.g. 8 point, 2 point leaded, has an area value to the EM quad of 8×10 points.

Finding the Type Size to use for a Given Work. These calculations have the commonest practical application in the printing or publishing office or advertising agency.

The basis here is the area value (in square points) of the EM quad. The number of words to a MS. being known, the *area* of the setting, *in ems of an unknown type size*, is at once available, since there are three ems to the average word.

Consequently, by finding the total area (in square points) of the pages in a given job, and ascertaining the number of words it is desired to include in the page, it is a straightforward matter to find the area (in square points) of the em quad of the type required to be used. From this result it is only necessary to find the appropriate factors in order to determine the type size and, if required, leading.

EXAMPLE (9)

What type size (and leading, if necessary) will be required for a work comprising 48,000 words, which it is intended shall make 150 pages, size 22 by 30 picas deep?

No. of words to be contained in 1 page $= \frac{48{,}000}{150} = 320$ WORDS.

No. of EMS in one page (type size to be ascertained) $= 320 \times 3$.

No. of square points to each EM:

$$\frac{\text{Square points of page area}}{\text{EMS in page}}$$

or $\frac{11 \quad 3 \quad \cancel{10} \quad 3}{\cancel{22} \times \cancel{12} \times \cancel{30} \times \cancel{12}} = 99$ square points.

$\cancel{320} \times \cancel{3}$

$\cancel{8}$

$\cancel{2}$

∴ Nearest factors are: 10 × 10 (100 square points).
or 9 × 11 (99 square points).

Type size = 10 point *solid* (to nearest point).
or 9 point, 2 *point leaded* (to nearest point).

In this instance, the most suitable type choice would be determined by other relevant considerations. Either setting would accommodate the MS. in the required number of pages.

When attempting to find the type size in which to set a work in order to make a pre-arranged number of pages, the above method is the most directly useful. It is possible, of course, to work on a "trial and error" basis, by guessing a certain size of type and then testing it, by the more usual method of finding the words to a page when set in that size. The method is cumbersome and cannot be recommended.

Leaded Matter. In practice, it often happens that a work, originally set in a certain type size, is to be reprinted in the same size but that the matter is to be leaded, This should cause the student no difficulty, since *leading affects the depth-wise dimension of the setting only.* The following examples will make this clear:

EXAMPLE (10)

(*a*) A work makes 240 pages set in 10 point, solid; it is proposed to reset the matter for a new edition. The type will be 10 point, 2 point leaded, in the new setting. How many pages will it make?

The type size remains the same (10 point).

The thickness of the leading is 2 points (or $\frac{1}{5}$ of the body size).

∴ 240 pages + $\frac{1}{5}$ extra for leading = 240 + 48

Total pages to resetting, therefore = *288 pages.*

(*b*) How many additional pages will a work make if it is leaded throughout by 3 points, if the original setting makes 320 pages set in 12 point, solid?

3 point lead = $\frac{1}{4}$ of the type-body depth (12 point).

∴ $\frac{1}{4}$ of 320 = *80 pages extra.*

Allowances for Copy, "White" Lines, etc. As previously mentioned, the widely differing kinds of copy, of necessity, influence the typographer's calculations in any given instance. For this reason the copy should be very carefully

perused to enable an appropriate allowance to be made for any peculiarities therein.

Consideration should be given, in all calculations, to the *inclusive* or *exclusive* dimensions of the page. By this is meant the allowance, or otherwise, for the normal headline and following "white" line, and (in some instances) folio line at the foot of a page. If the page is given with an *inclusive* dimension, it means that two, or perhaps three lines, of the type size should be deducted from the total lines to the page-depth, in order to ascertain the actual depth of page occupied by the text. Conversely, should the dimension given be *exclusive*, the actual text area is intended; and the head, "white" and folio lines will then have to be added.

In addition to these items, it is generally advisable to make an allowance of an addition of 10 per cent. for dividing into chapters (where these begin a new page on each occasion throughout a work[1]). This is to allow for short pages which may easily occur at the ends of chapters, and also to allow for the dropped-head of the chapter-openings.

If a MS. contains many short lines, as in the text of a play, a very careful computation of the copy should be made; also an allowance of an addition of not less than 25 per cent. should be made to the calculated number of pages, to allow for the many short lines which occur. In certain instances, it may even be necessary to increase the allowance to as high as 50 per cent.

With normal copy some allowance should be made for short lines (i.e. paragraphs) and this will vary, according to copy; usually from 5 to 15 per cent. is added to the calculated number of pages.

When ascertaining the type size in which to set a work, given the number of pages to be occupied by the copy, the student should *not* forget to allow the above-mentioned percentages for the reasons given. In the Example (9)—

[1] Under economy standards of production chapters are more generally run-on and do not begin a new page.

as in all other examples—no such allowance has been made; this is to avoid a confusion of the principles of calculation.

An allowance would have to be made when verse is included in a text. The best plan in such a case would be to calculate the actual number of lines, making allowance for any long lines which would turn-over.

Whenever illustrations occur in a work, due allowance should be made by making an overall calculation of the space they will occupy. If text matter is to run around the illustrations, careful calculation is essential, to avoid errors and difficulties.

In addition to the foregoing, it is important, when dealing with bookwork, to allow for inserted notes or footnotes wherever they may occur.

CHAPTER 12

CASE-ROOM CALCULATIONS (3)

WHILE in practice the compositor is, to-day, rarely called upon to calculate the weight of type to be ordered for a given work, it is advisable for the student to be conversant with the way in which this is done. The method also applies to ordering or ascertaining the quantity of leads for a specific job.

Weight of Type or Leads. The principle adopted for calculating the weight of type is on an area-value computation. The total area of a page or pages is found first. The basis of reckoning is that 4 square-inches of type equal 1 lb., *when set solid.* Therefore, if the page area is given in picas, 144 square picas equal 1 lb. An example will suffice.

EXAMPLE (11)

(*a*) What is the weight of type contained in a page, set in 10 point, solid, having an area of 3 inches $\times 4\frac{1}{2}$ inches?

Page area: $3 \times 4\frac{1}{2} = 3 \times \frac{9}{2}$ square inches.

Weight: $\frac{3 \times 4\frac{1}{2}}{4} = 3 \times \frac{9}{2} \times \frac{1}{4} = \frac{27}{8} = 3\frac{3}{8}$ lb.

$= 3$ lb. 6 oz. *weight of page.*

(*b*) What is the weight of type to a booklet making 16 pages, set in 12 point, solid, to a page area of 21×30 picas?

Page area: 21×30 square picas.

Weight of page: $\frac{21 \times 30}{144}$ lb.

Weight of type to booklet: $\frac{\overset{7}{\cancel{21}} \times \overset{10}{\cancel{30}}}{\underset{\cancel{8}}{\cancel{144}}} \times \cancel{16} = 70$ lb.

$= 70$ lb. *weight of type to booklet.*

To the above an allowance should be added for "dead letter", to ensure the completion of the setting without running short of sorts. Normally this would be not less than 25 per cent. of the weight, if 3 cwt. or more type had to be ordered for the setting of a job. In smaller quantities, a larger percentage (up to 50 per cent.) would be necessary.

The weight of leads is based on the em-length or inch-length to the lb. Varying figures have been given for these standards; type-founders have scales or tables showing the number of leads, in each of standard cut sizes, to the lb., and from these the following *average* figures are compiled:

Leads to 1 lb.	thin	(1½ point)	1,056 ems (12 point).
	middle	(2 point)	768 ems (12 point).
	thick	(3 point)	520 ems (12 point).

An alternative standard is that given originally by Mr. W. H. Slater:

Leads to 1 lb.	thin	(1½ point)	16 feet or 1,152 ems (12 point).
	middle	(2 point)	12 feet or 864 ems (12 point).
	thick	(3 point)	8 feet or 576 ems (12 point).

The advantage of the alternative standard is the convenient and easily remembered footage (which is quickly convertible to picas) but the present author advises the use of the first set of figures, if a more accurate result is desired. The following example shows the system in use:

EXAMPLE (12)

(*a*) How many leads, 3 point thick, cut to 22 ems measure, may be obtained from 2 cwt. of leads?

2 cwt. = 224 lb.

520 ems 3 point = 1 lb.

224×520 = total em-length of leads obtainable.

$\frac{224 \times 520}{22}$ = No. of leads obtainable.

$$= \frac{\overset{112}{\cancel{224}} \times 520}{\underset{11}{\cancel{22}}} = \frac{58{,}240}{11} = 5{,}294\tfrac{6}{11} = 5{,}294 \textit{ leads}.$$

(*b*) What weight of leads will be used to thick lead a work making 24 pages, 24 ems wide by 30 lines of 10 point deep?

Em-length to 1 page: 24×30.

Weight per page: $\frac{24 \times 30}{520}$ lb.

Total weight (in 24 pages): $\frac{24 \times \overset{6}{\cancel{30}}}{\underset{13}{\cancel{520}}} \times \overset{3}{\cancel{24}} = \frac{432}{13}$

$= 33\frac{3}{13}$ lb., or, say, $33\frac{1}{4}$ lb. *weight used.*

As with type, an addition, in the form of an allowance of 10 per cent. is necessary *when ordering* any quantity of leads. This is to cover any unforseen contingency and to ensure an adequate supply.

The student's attention is called to the necessity of keeping clearly in mind the alternative systems of calculating the weight of type and leads. Given a number of pages (to pica dimensions), set in a type size with leading, it is only possible to find separately the weight of type and of leads. It should be remembered that a leaded page cannot be calculated on the area basis as for a solid page. It is necessary first to find the exact depth of the number of lines of the type to the page. The weight of type (as if for a solid page) may then be found, and also the weight of leads when the number in the page is known.

Cost of Composition. Calculations relating to the cost of composition are an everyday occurrence in printing and publishing offices. Two systems are involved, one based on "piece-work", the other on "time-work" rates. The former greatly facilitates the "casting-up" of text or tabular composition, since it is only necessary to find the total number of ens to the setting, and to charge, to the nearest 1,000 ens (500 ens or more charge as 1,000), at the appropriate "piece"-rate. The charge per 1,000 ens will vary greatly

according to district and to individual firms. The "casting-up", or charging, of display setting is more generally done on a "time"-rate basis; in this case the amount of the setting has to be estimated in hours of setting-time and charged at the appropriate hourly rate.

Where the "time"-rate basis is used for charging of text composition, a very accurate assessment of the average output by the machine composition systems, or of the hand compositor, is essential if the charges are to be reasonably accurate. From the estimating department's viewpoint "piece"-rates simplify estimates for composition.

When a work is composed in more than one size of type, independent "casting-up" of each type size should be made, and *each size charged to the nearest 1,000 ens.*

For those students interested in the subject an example is given. The hourly rates should be taken only as indicative of average charges or rates (precise rates are ascertainable in every firm installing an accurate costing system).

EXAMPLE (13)†

Give the "cast-up" for setting a work making 210 pages of text, set in 11 point (Linotype) to a page area of 20 × 33 picas. There are, additionally, 8 pages of preliminary matter (hand-set); and 24 pages of tabular (without rules), to the full-page area, Monotype-set in 10 point type.

(*a*) ***Text, set Linotype:***

$$\frac{20 \times 12}{11} \times 2 = \frac{480}{11} = 43\tfrac{7}{11} = 44 \text{ ENS to line.}$$

$$\frac{\overset{3}{\cancel{33}} \times 12}{\underset{1}{\cancel{11}}} = 36 \text{ LINES per page.}$$

$$44 \times 36 \times 210 = \text{Total ens to text.} = 332{,}640 \text{ ENS.}$$

(*b*) ***Tabular, set Monotype:***

$$\frac{\overset{2}{\cancel{20}} \times 12}{\underset{1}{\cancel{10}}} \times 2 = 48 \text{ ENS to line.}$$

$$\frac{33 \times \overset{6}{\cancel{12}}}{\underset{5}{\cancel{10}}} = \frac{198}{5} = 39\tfrac{3}{5} = 40 \text{ LINES per page.}$$

$48 \times 40 \times 24 =$ Total ens to tabular setting. $= 46{,}080$ ENS.

(To which would be added 25 to 50 per cent., according to kind of tabular copy.)

(*c*) *Preliminary matter (hand-set):*

8 pages, say, averaging 1 hour per page $= 8$ *hours.*

Costs of setting:

(*a*) *Text:* 333 thousand ens @ 2*s.* 3*d.* (Linotype):

$= 333 \times 2\frac{1}{4}$ shillings.

$= 333 \times \frac{9}{4} = \frac{2{,}997}{4} = 749\frac{1}{4}$ shillings. = £37 9*s.* 3*d.*

(*b*) *Tabular:* 46 thousand ens @ 2*s.* 9*d.* (Monotype):

$= 46 \times 2\frac{3}{4}$ shillings.

$= 46 \times \frac{11}{4} = \frac{506}{4} = 126\frac{1}{2}$ shillings. = £6 6*s.* 6*d.*

(*c*) *Preliminary matter:* 8 hours @ 6*s.* 6*d.*:

$= 52$ shillings = £2 12*s.* 0*d.*

		£	*s.*	*d.*
Totals, each portion of setting:	(*a*)	37	9	3
	(*b*)	6	6	6*
	(*c*)	2	12	0
Total cost of composition†		£46	7	9

* The tabular "cast-up" is on the exact en quad assessment. In practice, an allowance of 25 to 50 per cent. is added, according to copy.

† NOTE.—The above computation does not allow for corrections or make-up or other ancillary operations which have to be considered in every job, according to requirements.

The above example does not pretend to be complete. In the absence of exact details of the work it is impossible to present an inclusive charge for composition. The details set out will, however, guide the student and enable him to understand the principles of "casting-up".

The Monotype-"Set" System as applied to Calculations. The only system which has an accurate assessment of the "set" value of type founts is the Monotype. For this reason it is possible, when using Monotype machines, to "cast-up" with far greater accuracy than when type is set by any other system.

The en quad system of calculation is adopted, but with a slight adjustment. Instead of calculating the number of ens to a line *in ens of the type body size*, the "set"-value of the fount is used to obtain ens to a line *of the "set" of the type in use.* To make this clearer, assume a Monotype fount of 10 point, $8\frac{1}{2}$ set is in use. Instead of using 10 point as the em unit width for the calculation of the ens to a line, the "set"-value of $8\frac{1}{2}$ is used. This means, actually, that the figure for the "set" of the Monotype fount is a most accurate guide as to whether a type is narrow, normal, or wide in the proportions of the letters to the fount. An example will make this quite clear:

EXAMPLE (14)

How many ens of 10 point ($8\frac{1}{2}$ set) Monotype are there to 20 picas measure?

$$\frac{20\times12}{8\frac{1}{2}} = \text{No. of EMS of the "set" of the type.}$$

$$\therefore \quad \frac{20\times12}{8\frac{1}{2}}\times2 = \text{No. of ENS to line.}$$

$$= 20\times12\times\frac{2}{17}\times2 = \frac{960}{17} = 56\tfrac{8}{17} = 57 \text{ ENS } \textit{to line.}$$

Naturally, the depth-wise dimension is *not* affected when applying the Monotype-"set" system to calculations, for the point-body is uniform with any other of the same size.

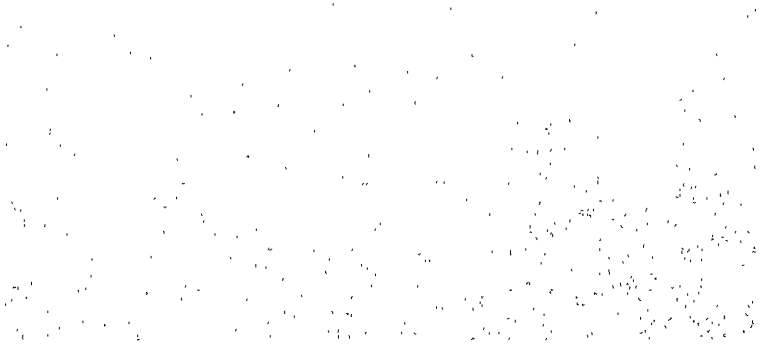
Adaptations or Variations of the En Quad System. The typographer in the routine of his work is required to "cast-off" copy for setting in various type founts by hand and mechanical composition systems. If Monotype founts are to be used, accurate calculations are the more readily made by using the unit-"set" principle in computing the ens to

a line (*see* preceding paragraphs). When hand-setting or composition by other systems is to be employed, the typographer will make various allowances or differences in calculation, to suit the founts he intends to use.

A useful variant from the normal en quad system is to calculate (when using certain narrow-set types) by using the figure of 5 (instead of 6) as the index to the number of ens to be allowed per word. Similarly, some founts will be found to require the use of $5\frac{1}{2}$ or $6\frac{1}{2}$, according to their "set" values. The best way of acquiring working data to this end is to prepare alphabetic settings, in capitals and lower-case, of every type fount in the office. These may be arranged into three or four groups, e.g. very narrow, narrow, normal, and wide. By careful trial and error, with verification of results in given jobs, following on calculations to the adjusted ens-to-a-word values, accurate reference material may be compiled.

* * * *

The accuracy of all type calculations depends largely on an intelligent analysis of the copy and any deviations required thereby, together with an alert perception of the relative differences between type founts, the space to be occupied by setting matter in different styles, and the judicious allowance for correct grouping and spacing throughout the work. If each problem is approached in a methodical manner and practical considerations fully envisaged, no real difficulty should occur to the compositor or typographer.



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